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LECTURES

ON

MEDICAL JURISPRUDENCE,

NOW IN COURSE OF DELIVERY,

AT THE

UNIVERSITY OF LONDON.

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LECTURE XXXVI.

POISONING (*continued*):—*With* SULPHURIC ACID. *Its effects on the first passages. Throwing of the acid on the person, or clothes. Treatment when swallowed, by neutralization, and bleeding.—Poisoning with* NITRIC ACID. *Symptoms. Its employment as a stimulant. Its effects on the living animal economy. Post-mortem appearances. Chemcial evidence of poisoning with this acid. Tests when it is found free, and when found combined. Treatment.—With* HYDROCHLORIC ACID. *Symptoms. Post-mortem appearances. Chemical evidence. Treatment.—General view of the internal and external action of the strong mineral acids.—With* OXALIC ACID. *Symptoms. Its absorption into the circulation. Mode of operation of this poison. Post-mortem appearances. Chemical evidence.*

GENTLEMEN:—In cases of poisoning by sulphuric acid, if nothing satisfactory be obtained from the examination of the phials, the cups, or the vomited matters, portions of the stomach, or of the gullet and the fauces, should be boiled in distilled water, the decoction filtered and concentrated, and then tested as I have already described. The gullet and fauces are, in general, more important parts for this examination than the stomach; for, owing to the powerful contraction which the acid excites on the gullet in the act of swallowing, it frequently never enters the stomach. This was well illustrated in a child who attempted to swallow some strong sulphuric acid, which it mistook for water, and in which I was consulted. The child died almost immediately after taking the acid, probably of suffocation from the contraction of the glottis. The post-mortem examination demonstrated that the acid had never reached the stomach, as both that viscus and the intestinal canal were untouched and healthy.

A case of the power of the stomach to resist the influence of the acid is detailed by Dr. MARTINI, and quoted by Dr. CHRISTISON from "Rust's Magazine." The man recovered, after having taken ʒvi of the strong acid. Another, a still more remarkable case, is recorded by Mr. ORR, assistant-surgeon to the 95th regiment, in the third volume of the "Medical Gazette," in which ℥ii were swallowed, and yet the individual recovered. A similar case was treated in the *Middlesex Hospital* two years ago; and one came under my own care last autumn, in the *North London Hospital*: but, from the rapidity of recovery in this last case, I am inclined to think that the acid must have been diluted. Dr. CHRISTISON mentions a case, from a German journal, in which ʒi proved fatal in seven days. On the other hand, a case occurred in Paris, in 1830, in which upwards of ℥i of the strong acid was swallowed, and yet the fatal event did not take place until the close of the fifth day.

Many cases of poisoning by this acid are, indeed, recorded. You will find them in "Fodere's Medical Register;" "Orfila's Works;" in the tenth, twenty-third, and thirty-first volumes of the "Edinburgh Medical and Surgical Journal;" and in almost all the British medical periodicals.

Some years since, a Bill was passed to prevent a malicious practice of throwing sulphuric acid on the body, or on clothes. (See RUSSELL on Crimes, i. p. 593.) In such cases you may be called upon to verify the fact. You will find the spots on which the acid has fallen, moist; that they have an acid taste, and give an acid reaction with litmus paper. The cloth, in such cases, is to be boiled in distilled water, and treated in the manner already mentioned. The examination of the cloth is, indeed, important in every case; as instances have occurred in which the proof of the administration of the acid was complete, and yet none could be disco-

vered in the contents of the stomach, nor in the intestines. In a case that happened at Aberdeen, the phial which contained the dregs of the acid was broken to pieces by a person who wished to screen the delinquent. The chemical evidence, therefore, would have been much weakened if the dress and bed-clothes had not been spotted with the acid, and sent to Dr. CHRISTISON, who found it on them.

Treatment.—In all cases which do not soon prove fatal, if the nature of the poison be known, we are bound to endeavour to counteract its destructive influence, and to save the life of the person. Every thing depends on being able to determine the nature of the poison as soon as possible; but it is sufficient if the history of the case inform us that the poisonous agent has been an acrid poison. A butcher was poisoned by his wife, at Aberdeen, in Scotland. In this case the medical men had no suspicion of the fact until twenty-four hours after the poison was swallowed, when they administered magnesia; but the strength of the man was exhausted, and he died twenty-seven hours afterwards,—forty-eight from the time that the poison was swallowed.

When we are called in time, we should immediately administer either carbonate of soda, or pure magnesia, or chalk, or solution of soap. The best of these is the pure magnesia, which forms a soluble purgative salt with the acid, which, at the same time that it operates by neutralizing the poison, carries it out of the habit. The carbonates of the alkalies and the chalk are inconvenient, from the extrication of much gas; but they are preferable to other substances not calculated to neutralize the acid. When vomiting occurs, little of the acid remains to be neutralized. In no case is the stomach-pump likely to prove useful, on account of the inflamed and highly irritable condition of the œsophagus.

In every instance bleeding is beneficial, and this is particularly the case when the power of deglutition is destroyed, and complete dysphagia has supervened. MARTIN has recorded a case of this kind, which was treated by bleeding, and recovered. You will find a most instructive case, of a similar description, in the third volume of the "Medical Gazette."

It is of some importance to repeat the bleeding, but not to a great extent at one time; for when this caution is not attended to, the fatal effect is hastened by the venæsection. For a long time after the violent and most dangerous symptoms are subdued, the patient should be nourished on milk and demulcents, and topical bleedings resorted to whenever pain at the epigastrium returns. In no cases of poisoning have so many instances of recovery been known as from sulphuric acid.

NITRIC ACID.

Nitric acid is one of the poisons which is the most commonly employed by the suicide, in its diluted state, or as aquafortis. Indeed, as regards the latter, its name of aquafortis may have some influence in producing this preference. The general symptoms are the same as those caused by sulphuric acid; namely, a burning sensation in throat, increased on pressure, acute pain of stomach, &c. The chief symptoms of poisoning by nitric acid are, the lips shrivelled and yellow, and the matters vomited mixed with large quantities of shreds. TARTRA mentions a case in which these shreds were passed as long as the patient lived,—eight months after the poison was swallowed.

Sometimes the pain and vomiting quickly subside, and no violent symptoms follow, yet the person soon dies. Occasionally, after the pain and vomiting subside, febrile symptoms, with laborious breathing, salivation, and fœtid breath follow, and marasmus supervenes. Sometimes, after the first pains abate, mere tenesmus, constant micturition and debility remain: at other times, the powers of life so effectually resist the influence of the acid, that, except vomiting of food, and dyspeptic symptoms, no inconvenience is experienced; yet marasmus follows, and at length kills. Often, when the sufferings are least, the fatal effect is most rapid. The senses are generally entire to the last. When the poison does not prove fatal, it is sometimes followed by an eruption of pustules, not unlike those of small-pox: occasionally with a miliary eruption; but this is common to poisoning by sulphuric as well as by nitric acid.

It is remarkable to what an extent the custom of employing stimulants renders the alimentary canal capable of withstanding with impunity the most acrid poisons. TARTRA mentions an instance of a woman who, when she commenced drinking, took common spirits, and then passed on to alcohol; but, not finding that sufficiently stimulating, took to drinking aquafortis, which she continued to do for some time, without suffering the smallest inconvenience.

I quote the following case from DUVERGIE's work, "Medicine Légale," because it affords an excellent display of the influence of poisonous doses of nitric acid on the animal economy:—"A painter of the name of Motel, who had gamed to excess, and ruined his prospects in life, resolved to commit suicide; with which view he purchased two ounces of concentrated nitric acid. The fluid was already at his lips, when he trembled, hesitated, and could not proceed. In two hours afterwards, passed in anguish and anxiety, worse than death, the mind became delirious, and he swallowed at one gulp the whole of the poison. He did not eat any thing during the morning, and swallowed

the poison at two o'clock in the afternoon. The pains which followed this desperate act were so excruciating that the poor wretch rolled with agony upon the floor of his chamber. Vomitings almost instantly supervened, accompanied by a sensation of extreme coldness in his limbs. A physician, who was called to see him, administered a solution of soap and oil; and at four o'clock the sufferer was conveyed to the *Hopital d'Humanité*. He vomited frequently by the way, and stopped from time to time to drink. On his arrival, he also called for drink, and was allowed linseed tea, *ad libitum*. He remained in a state of unceasing agitation, with his physiognomy completely altered, and constantly vomiting a black, glary fluid; his tongue was white, with a tinge of yellow; he experienced excruciating pains of the throat, extending down to the stomach; the abdomen was only slightly tense, but he could not bear it to be touched; the surface of the body was icy cold; the pulse small, concentrated, frequent: he had hiccough and embarassed respiration.

As the symptoms progressed, the sufferer, who had repented of the attempt on his life, became more agitated. By degrees, the surface of the body was covered with a cold, clammy sweat. The pulse was scarcely perceptible, yet there was no cessation of pain, and every symptom indicated rapid death. There was a constant desire to have a stool, with as constant micturition. This state continued during the whole of the night: the vomited matters became clear, and of a lemon-yellow hue; and towards morning he passed a few drops of urine. The aspect of the body was like that of a corpse; but the mind was entire; and he did not expire until nineteen hours after he had taken the poison, and sixteen after he was taken into the hospital.

On opening the body, the pharynx, the œsophagus, the stomach, the duodenum, and the upper half of the jejunum displayed evidences of the action of the poison, their coats being much thickened. The surface of the mucous membrane was of a deep red colour, and in many places covered with a yellowish-green shining coat, about two lines thick. The valvulæ conniventes of the duodenum were much developed, and nearly closed the cavity of the gut.

I have seen one case only of poisoning by this acid. The person was an engraver: he employed the weak acid aquafortis, which he used in his art. The symptoms were nearly those which I have described to you. The appearances displayed on the post-mortem examination of the body were nearly the following:—

1. The *skin* was in many places stained yellow, and a yellow mark of the rim of the glass from which the poison had been taken was very evident round the upper lip.

2. The *mouth* and the *gullet* were covered with a dense, yellowish, adventitious membrane, adhering firmly. It must be here noticed, that frequently the œsophagus appears as if it had not been touched by the poison, although both the mouth and the stomach affords evidences of its action.

3. The stomach was distended with gas, and patches of a paste of disorganized tissue were observed in two places, whilst the rest of the organ was fully injected and the vessels gorged. When the acid is concentrated, these patches are more numerous, accompanied with bloody, mucous, and gangrenous spots; in some instances perforations have followed, and the acid has escaped into the peritoneal sac. When the acid is weak, the vessels of the stomach are gorged with blood, the villous coat is black, and the viscus is altogether greatly contracted.

4. The duodenum presented the same appearance as the stomach; it is often found coated with an orange-coloured, factitious membrane; and when the acid has been weaker than usual, it has been found contracted to the size of a quill.

5. The peritoneum was inflamed.

6. The bladder of urine was contracted and empty.

Such are the usual appearances on post-mortem examination, which indicate poisoning by nitric acid. With respect to the chemical evidence, that must be divided into two parts, namely,

1. When the acid is found in a free or uncombined state.

2. When it is obtained in combination with animal and vegetable matters.

Free nitric acid varies in its characters according to the degree of its purity. The ordinary acid of commerce is always more or less coloured, and has a peculiar unpleasant odour: the pure acid is colourless, or nearly so. In either case, if any of the acid which has been taken as a poison, remain, we find that, whenever the skin is touched with it, it leaves a yellow mark, which is indelible, until the cuticle exfoliates.

3. When copper filings are added to it, they are oxidized at the expense of the acid, which is decomposed, and orange-coloured fumes of the binoxide of nitrogen, acted on by the air, are evolved.

4. When carbonate of potassa is added to it a salt is formed, which, mixed with charcoal, and heated to redness on the point of a spatula, deflagrates, or which, mixed with sulphuric acid, gives off orange-coloured fumes.

5. This acid is distinguished, in its concentrated state, by first changing to yellow, and afterwards to blood-red, when morphia or, what is better, brucia is added to it.

If we reflect upon the value of these tests for the concentrated acid, the simplest and most easily employed test, namely, the formation of a salt with potassa, capable of deflagrating when it is mixed with charcoal,

is the best; and if orange-coloured fumes are formed when copper filings and sulphuric acid are added to the salt, our evidence is complete. But it may be tested also with he morphia, or the brucia, as a farther proof.

Professor LIEBIG proposed to test this acid with sulphate of indigo, added in such quantity only as suffices to tinge the acid solution blue. If a drop or two drops of sulphuric acid be added to this mixture, and heat applied, it will be rendered colourless if nitric acid be present; but it has been justly objected to this test, that free hydrochloric, chloric, and iodic acids, produce the same effect as nitric acid.

When aquafortis has been used, it does not attack copper filings unless aided by heat, and the orange fumes are often so masked by the aqueous vapour, as not to be very obvious; nor does this weak acid redden morphia. The only test, therefore, might be supposed to be the formation of the nitrate of potassa; but if we add copper filings and heat, and, as soon as any effervescence appears, add a solution of proto-sulphate of iron, if the acid be the nitric it will rapidly deepen it to a deep olive colour. This is owing to the evolution of nitrous gas, which is the agent in producing this change on the sulphate of iron.

In the event of finding none of the acid in a free state, it is necessary to test the vomited fluids, or the contents of the stomach. These fluids should be first boiled, then filtered, and the filtered fluid saturated with bicarbonate of potassa, and evaporated to dryness. In this case it is of little use to mix with charcoal and deflagrate, as this frequently does not take place; instead, therefore, of doing so, the residue is to be mixed with sulphuric acid, and heated, and the fumes brought over through a tube dipping into a solution of the proto-sulphate of iron; if it is blackened, we may conclude that nitric acid is present.

When the animal or the vegetable matter in which the acid is supposed to be present, is not in a fluid state, the substance must be introduced into a small retort, water added to it, and the whole boiled for a quarter of an hour, collecting what distils in a receiver, kept cool. The residue in the retort is first to be tested with litmus, to ascertain whether it be acid. It is then to be filtered, and fresh water added, to extract all the acid by another boiling. A stream of chlorine gas is then to be passed through the filtered fluids; and, after being refiltered, they are to be boiled, saturated with carbonate of potassa, and evaporated to dryness in a water-bath. The nitrate is then to be treated with sulphuric acid and copper, and, lastly, with the proto-sulphate of iron, as before.

The strong nitric acid colours the tissues yellow, the weak acid, black. It is a strong proof of the existence of the acid, if the yellow-coloured tissues become red when they are brought into contact with an alkali; at least when they are boiled with it.

When the life of the person has been protracted for several days, even when the tissues display the yellow colour, it is extremely difficult to obtain any traces of nitric acid.

In cases where the poison has not proved fatal before you have been sent for, the same treatment is to be adopted as that which I pointed out to you as proper in cases of poisoning by sulphuric acid, namely, the administration of magnesia, demulcents, and bleeding.

HYDROCHLORIC ACID.

Little is required to be said on the subject of poisoning by hydrochloric acid, as there are very few cases on record of its having been taken, either accidentally or intentionally, as a poison. The only case, indeed, of which I am aware, is one published by ORFILA, which was communicated to him by M. SERRES:—"A man was taken into the *Hôtel Dieu*, on the 12th July, 1805, to be treated for a coup-de-soliel. On the 14th he was ordered a muriatic acid foot-bath. In the evening he was attacked with great agitation, a burning dry skin, a small concentrated pulse, a fiery-red tongue, blackish lips, hiccoughs, efforts to vomit, and the most acute gastralgia. On inquiring into the cause of these symptoms, it appeared that he had taken an ounce and a half of hydrochloric acid. He vomited yellow matters during the night. On the 15th the skin was cold and clammy, the epigastralgia was violent, the pulse extremely frequent, and there was continual delirium. He died at three o'clock in the afternoon.

On opening the body the lips were black, the tongue was brown, thick, hard, and dry; the pharynx and œsophagus were of a reddish-purple, and excoriated on several parts; the stomach was thickened and inflamed externally; in the interior the mucous membrane could be detached, in strips, with the least touch, and was covered with gangrenous patches; the duodenum was also slightly thickened; the jejunum was perforated, and a lumbricus was found in the peritoneal cavity.

With respect to the chemical evidence in such a case, we must ascertain, in the first place, the kind of muriatic acid which had been used. The pure concentrated acid is recognized by its being colourless, and giving off white, pungent vapours, greatly augmented by holding a rod dipped in ammonia near them. It throws down solution of nitrate of silver in curdy clots, insoluble in water and in nitric acid, but soluble in ammonia.

The common hydrochloric acid of the shops is always of a reddish-yellow colour, owing most commonly to its containing hydrochlorate of iron. The most distinguish-

ing character of hydrochloric acid, when pure, is its complete votalization.

When this acid is combined with vegetable substances, distil the suspected matter, in a chloride of calcium-bath, into a solution of potassa, and evaporate to dryness. Redissolve in water, and treat with nitrate of silver, after adding nitric acid.

If the acid be combined with animal matter, distil, also, until the mixture in the retort is much thickened, and the distilled fluid displays an obvious acid re-action; then test with nitrate of silver. The nature of the acid contained in the stomach, however, renders any conclusions obtained from the examination of the contents of the stomach very fallacious.

The treatment when death does not soon follow the administration of the acid is the same as in the other mineral acids.

If we take a general view of the action of the strong mineral acids, as poisons, we find that taken internally they act in two ways,—

1. By violent chemical action in the part, destroying its vitality, and leaving inflammation in neighbouring parts, if the shock be withstood by the habit.

2. By acting much within the limits of chemical action, setting up inflammation in the stomach, or other organs, sufficient to produce disorganization, and to destroy life by slow degrees.

The symptoms displaying the first description of action have been fully detailed. In the second, the symptoms resemble those of fever; increased vascular action; dry, hot skin; spasms; tension of the abdomen; great irritability of the stomach; vomiting of food when taken; laborious respiration; sometimes salivation, with great fœter of the breath. Along with these symptoms marasmus, which is, in fact, the cause of death.

In this condition, patients have lived for many months, even for nearly a year, and then died.

Applied externally, the mineral acids operate by chemical action destroying the structure of the part. Under this head we may rank those cases in which the acid never enters the stomach: the whole injury exists in the mouth and gullet; spasms; stricture, not only of the gullet, but the glottis, supervene; and inflammation spreads to the larynx.

Under the same head we arrange the introduction of the acid into the rectum after death.

In preparing evidence on these cases, we are not to confine our attention to the tests of the acids: much and most important evidence is founded on the appearance of the body and the clothes. If, in a body suspected of being poisoned, we find the appearance round the mouth and on the body of blistering or burning; if we find disorganization of the lining membrane of the mouth and the gullet; contraction of the gullet; corrosion of the stomach, &c., a mineral acid poison has been taken.

OXALIC ACID.

It is a remarkable fact in the history of human frailty and crime, that the self-murderer, in selecting the instrument to accomplish his purpose, does not always employ that which proves fatal at the smallest expense of suffering. No acrid poison destroys life so instantaneously as not to cause the most excruciating pains to him who swallows it; and perhaps among these the action of none is accompanied with more torture than *oxalic acid*. It proves fatal, however, independent of its acrid properties; and it is equally fatal when it is injected in very small quantity into a vein, or into the pleura, or the peritoneal sac, or is applied to the surface of a wound. Many and fatal accidents, also, have occurred from incautious people taking this acid instead of Epsom salts; which, in the ordinary form of its crystals, it much resembles, if the eye alone judge it. Its proper crystal, however, is very distinct from that of sulphate of magnesia. The crystals of oxalic acid are flattened, four-sided, or six-sided prisms, terminated by dihedral summits; those of sulphate of magnesia are four-sided prisms, terminated by four-sided summits, when the crystals are small; but when large they are six-sided, terminated by six-sided summits. To the ignorant, this method of distinguishing the acid is of little value; and the only other to which they can have recourse is the taste of the two salts, the one being sharply acid, the sulphate saline, bitter, and nauseous.

Oxalic acid, in one instance only on record, has been employed as an engine of murder. A man of the name of BROWN was tried at the Middlesex Autumnal Assizes of 1827, for administering oxalic acid to his wife in gin. It is soluble in spirits.

Symptoms.—These vary greatly according to the strength of the solution. The corrosive properties of the concentrated solutions are so great, that even when simply held in the mouth excoriation takes place. A young man in a desponding state of mind, who meant to commit suicide with this acid, whilst the solution was in his mouth hesitated, and did not swallow it. A most alarming excoriation of the tongue, the gums, and the mouth was the consequence. In a case, also, recorded in the first volume of the "Medical Gazette," saved by Read's pump, the mouth and tongue were red, swollen, and tender on pressure.

When the solution is concentrated, it sometimes destroys in ten or twelve minutes —generally in less than an hour. Instances, however, have occurred where death was

delayed for thirteen hours: and in one case described by Mr. Frazer (vol. xiv. of the "Edin. Med. and Surg. Jour."), the patient survived twenty-three days, and was ultimately cut off by fever, accompanied with dyspepsia, hiccough, and inanition.

When the acid is concentrated, excruciating pain at the stomach is felt, accompanied with violent vomiting, sometimes of blood. The respiration becomes impeded; a general numbness creeps over the frame; the pulse vibrating and sinking until it is scarcely perceptible at the wrists or the temples; the skin becomes cold and clammy; and the nails assume a blue colour. A drowsy state follows these primary symptoms, accompanied with extreme debility, during which death ensues, without convulsions or any striking phenomenon. Thence, even in the concentrated form, the primary symptoms, although those of a powerful acrid poison, are followed by others of a narcotic kind. In general, however, when poisoning occurs in man by this acid, in large doses and concentrated, death ensues before the narcotic symptoms have time to display themselves.

The case published by Mr. Fraser in the "Edinburgh Medical and Surgical Journal," to which I have alluded, demonstrates that, if life be prolonged for some days the symptoms intermit. In this case, the pain during the three first days was severe, and accompanied with vomiting and hiccough, which recurred three or four times in 24 hours, with intermissions. For the next three days all danger seemed at an end; but the hiccough returned, with difficult deglutition and severe gripings, and dejections consisting chiefly of filamentous shreds. These symptoms continued more or less to the 23rd day after swallowing the poison, when the unfortunate man died of inanition. The intellect continued unimpaired to the last.

When the acid is largely diluted with twenty times its weight of water, it is still poisonous, although it does not operate as an acrid, and little or no pain occurs; but paralysis of the heart takes place; and, if the dose be not very large, tetanic convulsions supervene. In still smaller doses, or more diluted, it appears to be absorbed, and then it acts chiefly on the brain, like a narcotic poison. That it is absorbed is undoubted, although it cannot always be detected in the blood. This was well demonstrated by two experiments by Dr. Christison and Dr. Coindet. A solution of the acid was injected into a portion of gut, between two ligatures, which was connected with the animal by blood vessels only. The poison displayed its influence as usual on the system, and caused death some hours afterwards; yet no acid could be found in the blood, nor could it be found there even when the acid solution was injected into the femoral vein. From equally conclusive experiments, the activity of the poison appears to be in the ratio of the absorbent powers of the tissue to which it is applied; as, for instance, the same quantity in solution when injected into serous sacs proves more speedily fatal than when introduced into the stomach, or into a mucous cavity, and it is slowest when it is applied to the sub-cutaneous cellular tissue. Dr. Christison mentions a curious proof of its absorption. In a case, the particulars of which were sent to him by Mr. Arrowsmith of Coventry, leeches fell off a few seconds after they were applied, and instantly died. Vernière observed the same circumstance in a case of poisoning by nux vomica. Notwithstanding these proofs of its absorption, and the fact that it cannot always be detected in the blood, yet, when it is mingled with blood drawn from the arm, it is easily detected. Dr. Christison explains this anomaly by supposing that it is decomposed in the vascular system by some unknown vital action. In my experiments upon quadrupeds I detected it in the blood.

In these experiments which I made upon rabbits, dogs, and cats, convulsive movements always preceded death. Efforts to vomit were striking in dogs only. The experiments of Dr. Christison and Dr. Coindet prove that the vomiting is always in the ratio of the quantity of the acid swallowed. In all their experiments the œsophagus was tied; in mine it remained open.

Such are the symptoms caused by oxalic acid; they demonstrate that the poison operates in two ways:—1. When the dose is large it acts topically on the coats of the stomach, destroying their vitality, and killing by a sympathetic injury of the nervous system. It is of little consequence whether this action of the poison on the stomach is a mere solution of the gelatine in the mucous corion and cellular tissue, as Dr. Christison asserts; or whether there is a mutual decomposition of the tissues of that organ, and the acid, as I believe, displayed by the brittleness and curdy, semidiaphanous, state of the tissues. One thing is clear,—the acid first destroys vitality, and then it acts either as a solvent, or otherwise, on the tissues. 2. When it is largely diluted with more than twenty parts of water, it kills neither by its irritant, nor by its sympathetic action, but as a direct sedative on the cerebro-spinal centres primarily, and, secondarily, on the heart and lungs; to all of which parts it is conveyed by absorption. I have never seen the tetanic convulsions, and the fixation of the respiratory muscles, which takes place in quadrupeds, and brings on the asphyxia that destroys them, occur in the human species.

In obtaining evidence of poisoning by oxalic acid from post-mortem examination, we find no difficulty when the solution is concentrated, or when a large dose of the

acid has been taken; and although the appearances vary, according to the time after death when the examination is made, yet those which present themselves eight or ten hours afterwards are the most important to be known; indeed, we cannot with decency examine a body sooner.

In the case of a Mr. Hobbs, "Medical Repository," vol. ii. p. 476, new series, the following are the details of a post-mortem examination of the body:—

"*Dissection.*—I examined the body about ten hours after death, in the presence of several medical gentlemen. The upper extremities, chest, and back, were much discoloured; the face had the appearance of of one who had been hung; a considerable quantity of dark, frothy fluid, had issued from his mouth; the abdomen was tumid. On cutting into the cavity of the peritoneum a small quantity of sanguineous fluid escaped. There was nothing remarkable in the general appearance of the viscera, except the great distension and discolouration of the small intestines. The mucous membrane of the pharynx and œsophagus appeared as if it had been scalded; that of the latter easily separated from the muscular coat, and on it were seen a number of minute, elevated, and opaque patches. The stomach contained about a quarter of a pint of thickish fluid; its villous coat was excessively pulpy, in many places of a black colour, in others highly inflamed. The mucous membrane of the small intestines exhibited pretty much the same appearance as that of the stomach, though in a less degree; they contained a small quantity of reddish pulpy fluid. There were many large patches of extravasated blood in the large intestines. The peritoneal coat of the stomach and intestines was much inflamed. The liver and gall-bladder appeared healthy; the latter was nearly empty. The spleen was smaller and harder than usual. The kidneys were healthy, but the pelvis of each was considerably more vascular than ordinary, and this extended a little way through the ureter. The bladder was natural; it contained a considerable quantity of urine. The mucous membrane of the larynx and trachea, and the lungs themselves, were intensely inflamed. There was no appearance of fluid in the pericardium, and the heart was healthy."

When vomiting has occurred, no appearances remain to indicate much local action. In one of the earliest cases on record (Medical Repository, vol. i. p. 382), ℥ss was taken, and proved fatal in 40 minutes, yet no evidence was obtained from the state of the stomach; indeed, many cases have occurred in which no change could be detected in the stomach.

Chemical evidence.—1. If some of the poison remains in crystals, compare the form of the crystals with those of Epsom salts; dissolve them in water; ascertain their acidity by the taste, or by litmus paper; precipitate with lime water, or a solution of chloride of calcium; the precipitate will be insoluble in an excess of the acid, but soluble in nitric acid, if the acid is the oxalic.

2. If nothing remains but in solution, test as before with litmus: neutralize with an alkali, say ammonia, and test with solution of chloride of calcium. The solubility of this precipitate in nitric acid distinguishes it from sulphate of lime. If we have only the contents of the stomach, or the vomited matters to analyse, we must first boil them with a little distilled water, decolorize with chlorine, and drop into the filtered fluid some solution of chloride of calcium; and, if a precipitate fall, it must be either *oxalate*, or *sulphate*, or *phosphate*, or *tartrate*, or *carbonate of lime*. If nitric acid take it up, it is not the sulphate; and if hydrocloric acid do not take it up, we may conclude that it is the oxalate; as that acid takes up the carbonate, the phosphate, and the tartrate.

If we test the decolorized fluid with sulphate of copper, this throws down oxalic acid bluish-white, and the oxalates pale blue, and hydrochloric acid does not dissolve the precipitates.

With nitrate of silver, a precipitate forms in fluids containing the oxalic acid, which, when dried and heated, fulminates.

A farther proof may be obtained, if the contents of the stomach, or any mixed fluid, is to be examined by precipitating with the solution of nitrate of lead, after neutralizing the suspected acid solutions with carbonate of soda. Wash well the oxalate of lead thrown down, and, whilst it is moist, decompose by a current of sulphuretted hydrogen gas. The supernatant fluid will give proofs of oxalic acid, by the usual tests, and when evaporated crystals will form.

If magnesia or chalk have been administered as antidotes, the process of testing is more complicated. Boil the insoluble matter in solution of carbonate of potassa; an oxalate of the alkali is obtained; wash well the filtered fluid, and test as before. If possible we should always strengthen our evidence by procuring the acid in a crystalline form.

An excellent test of the oxalate, when it is procured, is the property which it possesses of precipitating gold from its solutions at a boiling temperature, in a metallic state.

In Lecture XXXIV., p. 325, col. 2, line 16 from the bottom, for "drachms" read *ounces*.

LECTURES
ON
MATERIA MEDICA AND THERAPEUTICS,
NOW IN COURSE OF DELIVERY
AT THE
WINDMILL-STREET SCHOOL OF MEDICINE,
BY
GEORGE G. SIGMOND, M.D.

Lecture XVII.

DATURA STRAMONIUM, (*concluded*).—*Occasions on which it may be usefully substituted for opium. Its employment homœopathically. Its influence on the generative organs, &c. Datura tatula used in place of stramonium. Stramonium in burns. Smoking of stramonium, as a remedy for asthma, and other pulmonary affections. History of its recommendations and deprecation. Lecturer's qualified opinion in its favour. Eagerness with which relief from embarrassment of breathing is sought. Imbibing power of the pulmonary surface. Objects of inhalation. Directions for smoking stramonium. Treatment when poisonous. Camphor remedies.*

GENTLEMEN:—In my last lecture I enumerated a number of diseases in which the thorn-apple, the datura stramonium, had been successfully administered. As it is my anxious wish that you should be in possession of as many resources as possible for assuaging pain, and alleviating the terrors of diseases, I shall point out to you some further instances of the power it enjoys. I am certain that you will very often find it a useful substitute for the more important narcotic, opium, and that you may safely and satisfactorily employ it.

In some of those neuralgic affections which I have had occasion to tell you occasionally baffle every expectation of the physician, and in which we are obliged to change from one remedy to another, from the consciousness that we have not as yet precisely ascertained all the points connected with the disease, you will find this herb sometimes answer the end proposed. Dr. BEGBIE, who, in the year 1825, published in the "Edinburgh Medical and Chirurgical Transactions" the result of some experience, states that he considers the narcotic properties of this plant as decidedly superior, in some cases, to those of other medicines of that class, and he details instances illustrative of its sedative powers. In no case did he perceive any bad effect, with the exception of, in one instance, an unpleasant nervous sensation in the throat. You will find, from one of the periodicals, that Dr. ELLIOTSON has given stramonium at *St. Thomas's Hospital;* in the year 1828 some reports of the cases appeared. He very successfully treated a neuralgic affection of a very severe character, by giving a grain of extract of stramonium an hour before the accession of the paroxysm, which was intermittent; on the third day the excruciating pain was mitigated, the dose was then increased one half, and in ten or twelve days the disease was cured. In another instance he combined mercury with stramonium, and when ptyalism was superinduced the pain ceased, and a cure was effected.

Stramonium is to be found in the "Pharmacopœia Homœopathica;" it is to undergo nine attenuations, and a single drop is a dose for delirium and convulsions, which, of course, it is known to excite; and upon the same principle as it produces demonomania it also relieves the unfortunate sufferer from that fantastic madness. Those who have taken stramonium, I have before observed, have, for a time, had loss of memory, and sometimes it has completely destroyed that power of the mind; hence the homœopathists recommend it to assist the recollection, and for the cure of amnesia, the latyphrosyne of the Greeks, and morbid forgetfulness of the nosologists. SAUVAGES has given us eight species of this disease; in one, a pathemate, or the abolition of memory by sudden terror, or violent grief, stramonium has been tried both by SCHENKIUS and SAUVAGES.

Professor WENDT has, in "Rust's Magazine," given us rather a singular dissertation, drawn from his observations and experiments, on the medicinal and physiological effects of stramonium. From this we learn that it exerts a somewhat extraordinary power upon the generative organs. He thinks it has a specific influence upon the reproductive system; it has the peculiar effect of exciting it, when given in a full dose to a person in health, but of diminishing, likewise, any proneness that may exist to venereal indulgence, when a morbid state is present. He says that it is useful in nymphomania, in epilepsy, and more especially in cases which have been brought on by an undue indulgence in sensual gratification. He is an advocate for its use in cases of irritation, and in some inflammatory diseases, after the high action has been controlled by such depletion as may have been necessary. He has a formula which he thinks superior to any other: it is a tincture which is made by macerating two ounces of the dried seeds in eight ounces of Malaga wine, with the addition of one ounce of alcohol; of this an adult is advised to take, every two or three hours, from six to twelve drops, as a dose. In India, where the datura fastuosa is preferred, a tincture recommended occasionally by Dr. ADAM in the "Transactions of the Medical and Physical Society of Calcutta," has been very highly spoken of. It is a

saturated tincture, prepared from the capsules, seeds, and leaves, mixed in equal parts, and with the proportion of proof spirit used by the London College in the preparation of tincture of digitalis.

In "Dr. Duncan's supplement to the Edinburgh Dispensatory" you will find an abstract of some cases under the care of M. BARBIER, in which he employed the leaves of the datura tatula instead of the stramonium. The doses were very large; in one instance no less than 158 grains of datura tatula were taken in six days: the symptoms that presented themselves during the time were those that might naturally have been anticipated, such as difficulty of deglutition, disturbed vision, loss of sleep, and general disorder of the nervous system; from these effects, however, the patient recovered quickly. In another instance, 243 grains were taken in one day for neuralgia, and the same train of symptoms was the consequence. In a third case it was impossible to give more than fifteen grains, as delirium and great agitation were produced.

Our antiquarian herbalist, the worthy and cautious GERARDE, ascribes a power to stramonium which I have not heard has been made use of. He says,—"The juice of thorn-apples boiled with hog's grease, to the form of an unguent, or salve, cures all inflammations whatsoever, all manner of burnings or scaldings, as well of fire, water, boiling lead, gunpowder, as that which comes by lightning, and that in a very short time, as myself have found by my daily practice to my great credit and profit. The first experience came from Colchester, where Mrs. LOBEL, a merchant's wife there, being most grievously burned by lightning, and not finding ease or cure in any other thing, by this found help and was perfectly cured, when all hope was past by the report of Mr. WILLIAM RAN, public notary of the said town."

I must now detail to you the circumstances attendant upon the introduction, to the medical profession of this country, of the datura stramonium as a remedy capable of alleviating the symptoms of, or permanently curing, asthma. They are rather of a singular nature: the discrepancies of opinion upon its value, as taken in the form of a smoke, are with difficulty reconcileable, and they have led almost to the abandonment of a most important remedy, and one which, if properly made use of, may be productive of very considerable advantage to a numerous class of invalids.

When tobacco was first smoked, we find our earlier authors minutely laborious in their investigations as to its effects upon asthma and consumption; they boldly asserted its efficacy, and brought forward cases in evidence of their opinions. EDMUND GARDINER has given us one of these instances in a friend in Huntingdonshire, "whose lungs were so choked that he could not breathe but by holding his neck upright, inasmuch that many times, especially in the night season, he was threatened with suffocation, by means of which, together with an extenuation of the whole body, and his extreme cough, he was judged tabidus of most physicians that visited him. When all men thought he would have died, he was at length counselled to take tobacco in fume, which he daily did, and only by this way, by little and little, he recovered his former health of body." Others recommended it in the same way, but it passed into oblivion as a remedy. Stramonium, however, at a later period, succeeded to it, and on reviewing the time at which it excited attention, we find the warmest eulogium, and also the most virulent abuse, of it, though not certainly to the same extent as it had been the lot of tobacco to encounter. We find it described by some as producing sudden and almost magical effects, by others as infamous and even fatal. "Sometimes the morbid sensibility of the asthmatic was appeased, and the nervous patient, if he was not cured, had drunk oblivion of his cares, and fell into a quiet somnolency; as the charm dissolved, the magic calumet was at hand to renew it, and thus, from time to time, the sick man smoked and was relieved, and thus, from day to day, his remaining energies were benumbed, until fatal coma released him from his sufferings radically, or nature, struggling with epilepsy, shook off the insidious remedy." Empirics began to avail themselves of its use, for either accident or some obscure tradition had revealed to them the powers of the herb before the medical profession was led to try its qualities and its safety.

The first legitimate introduction of the datura stramonium, as a remedy for asthma, and other pulmonary affections, is to be attributed to Dr. SIMS, who very strongly recommended smoking the herb. It was in the year 1802, that General GENT, on his return from India, gave to that learned physician and accomplished botanist, a remedy which was used in the East as a specific for relieving the paroxysms of asthma, and told him that it was prepared from the roots of the wild, purple-flowered thorn-apple, the datura ferox. The roots, it appeared, were cut into slips, as soon as they were gathered; they were then exposed in the dry air, in the shade, until all moisture had completely evaporated; they were then beaten into fibres, very much resembling in appearance dry hemp. When the remedy was to be tried, these shreds were placed in the bulb of a pipe, either with or without tobacco, according as the individual had been previously accustomed to smoking or not, and then inhaled, after being kindled, in the usual form. This plan and mode of treatment had received the sanction of the highest

medical authorities in India, and Dr. ANDERSON, physician-general at Madras, not only recommended it, but is said to have had recourse to it himself.

Dr. SIMS, in one of the periodicals of that day, related a case in which he was induced to administer this remedy. The daughter of an eminent physician laboured under phthisis pulmonalis, combined with asthma, as it appeared to him, from the frequency of the paroxysms of difficulty of breathing, not usual in pure phthisis, at least in so early a stage of the disorder; with a view of alleviating these distressing paroxysms, he recommended a trial of the datura, as given to him by General GENT; the relief obtained was far beyond his expectation; and, although the lady gradually sank under the incurable disease, yet she continued to experience throughout its progress, even to the last, the greatest comfort from its use. He then recommended it to Mr. TOULMIN, of Hackney, who had for several years suffered frequent paroxysms of asthma; he was much benefitted by it, and having exhausted all the stock given him by Dr. SIMS, he determined, on the suggestion of the Doctor, to supply its place with the datura stramonium, which he found equally serviceable.

About the year 1810 a controversy sprung up, in consequence of the appearance of a pamphlet, called "A Familiar Treatise on Asthma, Difficulty of Breathing, Wheezing, Winter-Cough, and Consumption of the Lungs; containing, with other Information, explicit Directions for the Use of the Stramonium Herb, by FISHER, Surgeon, formerly an Asthmatic Invalid;" and likewise there was inserted in the "Monthly Magazine," from a good Samaritan, a letter, under the signature of VERAX. He detailed the symptoms of his asthmatic complaint, said he had consulted "the most eminent physicians of the metropolis," from whom he derived only "transient and tantalizing relief." He described himself as a *bon vivant*, and gave a pleasant narrative of his very enjoyable mode of passing through life, until he was interrupted by his attack. He was persuaded, he says, "to smoke the *divine* stramonium, to which I owe altogether my present freedom from pain, and renewed capacity of enjoyment." The writer of this letter is known to have been a gentleman of fortune, residing in Guildford-street, whilst the pamphlet was attributed to a well-known medical man, who had been the means of introducing into practice some drugs of acknowledged efficacy.

I have never had an opportunity of seeing the first edition of this pamphlet; the only copy I could procure is dated in the year 1823. I judge from the criticisms of the periodicals of that time, that much matter is omitted in the latter editions, which called forth some bitter feeling in the profession. The first notice taken of it by the "Medical and Physical Journal" informs us, "that the only way in which it differs from other empirical ephemera is, in its abuse of two gentlemen, of most respectable characters, and whose talents are an honour to the profession of medicine. In the following year I find Dr. BREE asserting, in the same publication, in a letter, "that he knew much of the matter in that treatise to be wholly false." The pamphlet is a very clever production of an individual who had evidently some commercial object in view; and the author had some peculiar preparation which he wished to sell. Notwithstanding this, there is a mass of evidence of individuals whose names were fully known to the public, who had experienced benefit from smoking stramonium; some of these were professional men, who detailed the cases of their patients; others were men of rank and station in the country. Many of them state their preference of the datura tatula, which I have every reason to believe the author of the pamphlet wished to introduce instead of the stramonium. The abuse, which, it appears, was levelled against two physicians, is very much diminished in the edition which I have seen, for, although there is a very amusing description of a consultation with two leading men of the day, their names are not given. We are led to draw our conclusions from the nature of the questions, and the treatment recommended by each of these individuals, and we easily see that the descriptions refer to two men of high practice in that day, the one remarkable for his work upon asthma, the other upon the diseases of the liver.

Dr. BREE then gave the result of his observations upon stramonium, and his opinion was most unfavourable, and as he was considered the great authority for diseases of the lungs, a considerable damp was thrown upon the eager expectations of those who had fondly anticipated so much from this highly praised herb. It was observed in one of the periodicals, that "Manna could hardly have proved more grateful to the hungry Israelites in the wilderness, than did this treatise of Mr. FISHER to the wheezing asthmatics." Dr. BREE, in his letter, states, that from the beginning of the year to the month of April, he had seen eighty-two patients who had smoked stramonium; those who had derived no permanent good effect were fifty-eight out of that number, the remaining twenty-four had been all of them more or less injured, and some of them destroyed, by the practice. Of the fifty-eight, eleven certainly were not in a state to try the remedy, and whether the others derived even temporary relief we are not told. He gives in the list of twenty-four, seven patients with phthisis, who evidently ascribe the natural course of the disease to the bad effects of the herb. He states an

instance in which epilepsy occurred to a lady advanced in life, who had never before had any attack of the kind; he likewise adduces instances where the worst symptoms had rapidly supervened, but they were in constitutions highly debilitated, and in cases where the difficulty of breathing was the result of organic change of the most important viscera, and where disease would, under any circumstances, have rapidly developed itself.

But an event occurred which naturally excited amongst the afflicted with this disease a very strong sensation, and overwhelmed with dismay the advocates of smoking stramonium. In the periodicals of the day will be found the remarkable history of the fate of a gentleman, deservedly esteemed and regarded, who, with a zeal highly praiseworthy, had materially assisted in the introduction of this, which he believed to be so valuable a remedy for an afflicting disorder. At that time, delicacy to the parties prevented the name of the individual, whose loss was much deplored, from appearing; but, as time has worn away the necessity for such a feeling, and as the case has become one almost of medical history, I may state to you, that the gentleman whose name I have mentioned to you as the person who had brought with him the datura from Madras, and had given it to Dr. Sims, is the unfortunate subject of my present narration.

Sir George Gibbs, a physician of high character and talent, was suddenly called on to attend this gentleman at Bath. He found him in a comatose state; he appeared stunned, and his resolution was impaired; his head was reclining on a sofa; the pulse was scarcely perceptible, and the carotid arteries had little or no pulsation. It appeared, on inquiry, that the gentleman had smoked stramonium on the previous evening, in consequence of his having been much affected with shortness of breath; he had then exhibited symptoms of stupor. He arose the next morning, in a heavy, comatose state; a large blister was applied to the back, purgatives were administered, and a draught of camphor and squills. On the second day, the blister and the purgatives had produced their wonted effect, and the mental faculties were somewhat recovered. On the third day his recollection was much better, his pulse was perceptible, and some return of shortness of breath had occurred. On the fourth day he suddenly expired after dinner, either whilst sleeping, or immediately after awaking. Dr. Parry, who was the nearest physician, was, at the spur of the moment, as he lived close by, sent for; but he found him dead, upon his arrival. The patient was of a full habit; he had been affected, about twelve months before, with wheezing and cough, from which he recovered, under the care of Dr. Gibbs, by ordinary treatment. At the commencement of this last attack, he had, without any consultation with his medical adviser, smoked largely of stramonium three or four times.

This case, of course, was cited on every occasion when the remedy was proposed; and the writers who had decried it exulted in their foresight, and no instance of its good effect was allowed to be genuine. Mr. English, a medical practitioner, narrated his own case in the "Edinburgh Medical and Surgical Journal:" immediately another periodical assailed him; it was "an equivocal history"—if "we had not been assured by persons who seem to have the means of knowing, we should doubt its being related by a person educated in the medical profession." On another occasion, the reviewer complains that only those who are cured write their history, whilst those who are killed forget to do so. He bitterly exclaims, "It is difficult to obtain the particulars of the unfavorable cases, where the remedy has been used. When persons quack themselves, they are extremely unwilling to publish the mischief which has been occasioned by their own folly and imprudence."

I have detailed to you the opinions which were urged against the employment of stramonium at the commencement of its introduction to the profession, and which very strongly militated against its general use. No individual for some time felt himself justified in having recourse to a remedy which so many persons decried, and which was stigmatized in the strongest language. Gradually, however, the prejudices wore away. Some persons, bolder than others, or induced by the failure of ordinary means, now and then prescribed it; and though it has fallen, comparatively speaking, into disuse, it is occasionally mentioned in our periodical literature; and cases of its beneficial influence are narrated by Gooch and others. I would by no means have you abandon a remedy, which, when judiciously and carefully employed, will most decidedly afford relief in one of the most distressing maladies to which our nature is subject, and to which at a late period of life many individuals are prone. Probably the records of our science in this country do not afford any such striking language in its favour as that which has been used by a distinguished professor in the United States, who has cultivated medical botany with very great assiduity and care; and whose work, upon the medical botany of the United States, has obtained for its author a high degree of consideration. I allude to Dr. Bigelow, who thus speaks: "The thorn-apple is employed with very frequent success by asthmatic patients, and it would not be difficult to designate a dozen individuals in Boston and its vicinity who are in the habit of employing it, with unfailing relief, in the paroxysms of this distressing complaint. The cases in which it affords relief are those of pure spasmodic asthma; in which it doubtless acts by its sedative

and anti-spasmodic effect. In those depending upon effusion of serum into the lungs, or upon the presence of exciting causes in the first passages, or elsewhere, requiring to be removed, it must not be expected that remedies of this class can afford relief. In several cases of plethoric and intemperate people, I have found it fail altogether, and venesection afterwards to give relief."

Few subjects are more deeply interesting to us than those which are connected with the organs of respiration. Modern science has recognized its importance. The paths pointed out by AVENBRUGGER and LAENNEC are at this moment pursued in this country with an ardour and a zeal which reflect the highest lustre upon the names of the individuals, who, regardless of the labour and difficulties they have to encounter, are clearing away the impediments which have retarded our progress. Dr. FORBES, Dr. CHARLES WILLIAMS, Dr. CLARKE, and Dr. WILLIAM STOKES, are giving us means to distinguish thoracic disease, which will ere long enable us to choose from our stores of materia medica, therapeutic agents to combat each varied form of pulmonic affection. There are many states in which inhalation will be found most useful,—if not in curing these diseases, in alleviating their most distressing symptoms; whilst again it may be a source of the greatest mischief. It is in the paroxysm of spasmodic asthma that stramonium has been most generally used,—formerly very often without first seeking that advice and assistance which should only be sought from the medical man of long experience and careful observation. Indeed, the paroxysm of embarrasment of breathing is so very distressing, that an individual flies to every object which holds forth to him a promise of relief; and hence it is that the bold and impudent adventurer has so often chosen, as the province in which he will carry on his nefarious practice, diseases of the respiratory organs. A sufferer will have recourse to any remedy that he believes can control the disease, and for instantaneous relief he will encounter any difficulty. During the paroxysm, life is insupportable, and instances have not been wanting, when, in the despair of the moment, suicide has been committed. In one case an officer of the army, who had undergone the severest pain from wounds, and who had seen the hardships of war in some trying campaigns, destroyed himself whilst thus suffering, as much to the astonishment as to the grief of his friends, who knew that he enjoyed, with the exception of this malady, all that could render life desirable. He had a cultivated mind, an ample competency, and, as every one believed, great moral fortitude.

Wherever a substance is to be considered to be "remedium anceps," more than usual caution is necessary in our inquiries into the particular effects which it generally produces, and likewise into the nature of diseases in which we employ it; we must also ascertain what are the mischievous consequences that follow upon it, and, lastly, how we are to obviate them when they occur. We shall find that stramonium is to be classed amongst the most decided of the sedatives that we possess, and that it acts most energetically upon the brain, that it is quickly absorbed, and that the whole nervous system exhibits proofs of its power of action. It may, by inhalation, act with much greater rapidity than when taken into the stomach, for you must bear in mind, that during the process of imbibition into the lungs it already begins to traverse the circulating tubes, so that the whole medicinal power, and even the aroma, which is increased by heat, is carried with the most extraordinary rapidity into the system. You must remember, that from the extreme delicacy and permeability of the pulmonary tissue, there is a very rapid transmission from its extreme capillary vessels to the very seat and foundation of the circulation, the heart. The whole system is almost instantaneously acted upon; indeed, so energetic are the results of introducing active agents through the medium of the lungs, that in an instant

> "The spring, the head, the fountain of the blood
> Is stopped, the very source of it is stopped."

Death is produced, and this may occur from two different causes of cessation of vital action, in one of which, asphyxia, the lungs are incapable of performing their natural office; in the other, syncope, the heart is unable to fulfil its destined function.

You, doubtless, remember a series of lectures which appeared in THE LANCET in the year 1834, by MAGENDIE, on the physical conditions of the tissues of the human body, as applied to the explanation of vital phenomena. I must refer you to them as embracing most valuable information upon the power possessed by the different tissues, of drinking-in, absorbing, or inhaling, that which is presented to their contact, the influence which this action is capable of producing upon the general system. You will learn from those lectures that the lungs present to our view a mass of vessels which pervade the whole of their surface, and that as the membrane which forms the last ramification of the bronchial tubes is of the utmost delicacy and tenuity, vapour introduced into the interior of the respiratory system may almost be said to be in contact with the vessels themselves. You know that the circulation of the blood to the heart is rapid, and that the lungs are situated near the great centre of the nervous system, to which, indeed, they are most intimately united by the eighth pair of nerves.

From all these circumstances we can fully comprehend how narcotic aromas, or the vapour of prussic acid, or of iodine when

thrown into contact with the pulmonary parenchyma, are quickly transported into the general circulation, and that the various phenomena which these objects are capable of causing are produced with inconceivable rapidity; in some cases the lapse of time required for this purpose is so instantaneous that it cannot be calculated.

Nature, with her wonted guardianship of the being which for mighty ends has been created, has made a provision by which the imbibition of any agent which might disturb the functions of those important organs, is prevented. She has placed a membrane of the most exquisite sensibility, as a guardian, at the entrance of the glottis, in the larynx and superior portion of the trachea, the consequence of which is, that a violent spasmodic effort of the muscles, a cough, sometimes most severe, occurs, when any deleterious vapour attempts to find its way into the pulmonary tissue; as an example of this, we are told by Sir HUMPHREY DAVY, that upon his making an experiment to ascertain whether he could inhale *nitric* oxide gas, he first used the precaution of breathing the *nitrous* oxide gas, or that which is known to you, from the peculiar powers it possesses, under the name of the intoxicating gas, in order that he might expel the atmospheric air as much as possible from his lungs; but he found that the small quantity of nitrous acid fumes formed with the remaining air, was sufficient to cause a sense of burning in the throat, and at once stimulated the glottis to contract, so that none of the nitric acid gas could pass into the larynx. At the lower part of the trachea the sensibility is diminished; still, however, on the introduction of any foreign substance an effort takes place, and irritation sufficient occurs to produce a slight cough, by which any foreign body is removed, or, in common language, expectoration results. This may be one of the objects of inhalation, or we may wish merely to allay irritation, or we may propose to ourselves to increase the pulmonary transpiration by which may be dislodged any extraneous matter which may impede the due function of the organ of respiration.

In considering whether you should employ stramonium, or any narcotic, you will judge, from what I have said to you, that you should never administer so large a dose by the inhaling process as you would by the stomach, for that you might produce irrecoverable stupor by a dose which would not prove injurious if taken into the alimentary canal; and that this depends upon the rapidity of the conveyance of the property of the narcotic to the great organs of life, and to its being placed almost in contact with the tissues of which those organs are formed.

In pure spasmodic asthma, during the paroxysm, stramonium may be smoked, where there is not the slightest tendency to apoplexy, epilepsy, or paralysis. Where dyspnœa is present, or constant difficulty of breating, it is not to be recommended, nor where the embarrassment is the result of hydrothorax, or of diseased abdominal viscera. It is only to be pursued for a very short time, and the intervals between inspiration should be long; when the slightest giddiness comes on it must be immediately given up; the saliva should be swallowed. The patient should, if possible, avoid sleeping immediately after its use, and in preference should take moderate exercise.

Should incoherent talking, flushed face, alteration of vision supervene during the smoking of stramonium, it should immediately be discontinued; nor should it be persevered in, if relief be not very speedily obtained, for, from the circumstances I have mentioned, the expected ease should be almost immediate. The fumes of the more decided narcotic, opium, inspired only once or twice, has as much influence as a grain of the drug. Should stupor, delirium, tremor, convulsions, and coma occur, you will find that affusion of cold water upon the head, or sprinkling it well with water, slightly acidulated, will be the best step to be taken for instantaneous relief, and then the administration, internally, of diffusible stimuli. One of the most striking means of restoring a patient under such circumstances, if the apparatus be at hand, is the injection of a lavement containing camphor, for no sooner is it introduced than it is found in the pulmonary transpiration, which you will immediately recognize by the odour of the expired air; the quantity used must be very small, for the stimulus to the system is very great. If a strong solution of camphor be injected into the rectum of an animal, the effect is very extraordinary; on some occasions he has been seen to leap several feet from the ground, at others to be seized with convulsive movements of the mouth, and of the muscles of the face, and sometimes to make a retrograde movement of an extraordinary kind; at other times to run up and down as if in a rabid state. Ten grains of camphor is as much as should be employed. Dr. EDWARDS, of Paris, injected half a drachm; his patient, in a few minutes, felt a camphorous taste, and for twenty-four hours his breath exhaled a camphorous odour. He felt an indescribable uneasiness; he was anxious, without thinking himself in danger; he shed tears involuntarily. On going down stairs to get assistance, he was surprized to find that his body appeared so light that he seemed to skim along the floor without touching it. He began to stagger, his face became pale, he felt chilly, and was attacked with a sense of numbness in the scalp; a glass of wine was given him, and he gradually recovered, but for some time his mind was singularly affected.

BRESCHET
ON THE
ABSORBENT SYSTEM.

Le Système Lymphatique, considéré sous les Rapports Anatomique, Physiologique, et Pathologique. Par G. Breschet, &c. &c. Avec Quartres Planches. A Paris: chez J. B. Ballière, et à Londres même Maison.

The Anatomy, Physiology, and Pathology of the Lymphatic System. By G. Breschet.

The character of M. Breschet as an anatomist, a physiologist, and a pathologist, is so well established, that we do not deem it at all necessary to offer any apology for presenting to our readers a condensed analysis of his new work on the absorbent system. That system is, beyond all doubt, one of the most interesting of those which enter into the constitution of the living body, although probably less is known of it, and of its proper functions, as well as of the agency by which those functions are carried on, than of any other system. The important office of fabricating that fluid which, together with the chyle, is destined to form arterial blood as well as the important function of interstitial absorption, is conventionally assigned to it. Whether this system be the exclusive instrument of the latter office, we shall not here discuss. Certain it is, that in reference to that function which may be justly considered as the complement of all the other organic functions of the body, namely, the function of nutrition, this system holds a very distinguished place. When it is considered that the differences of this system, in reference to its proportions as compared with the other systems of the body, constitute one of the most important circumstances which influence the physical and moral physiognomy of man, forming what is called his temperament, the fact that this system is one of those systems which is the most exposed to disease,—is a system the diseases of which exercise a very great influence over the function of nutrition, and when we reflect on the still more important consideration (as being a practical one) that this system is made the vehicle, or, at least, the medium, through which medicinal agents are made to act in the treatment of some of the most serious diseases,—all these circumstances make us hail with pleasure any new light which may be thrown on so interesting and so important a subject.

The author divides his work into four chapters. Chap. I. treats of the *General Anatomy* of this system. The ancients probably had no idea even of the existence of chyliferous vessels; certainly none whatever of the proper functions of those vessels. Galen's theory of nutrition was, that the alimentary materials were absorbed within the intestinal tube by the meseraic veins, which were to convert them into blood. In 1565 Eustachius discovered the thoracic duct; which discovery, however, produced no change in the Galenic theory of nutrition. In 1622 Aselli discovered the chyliferous vessels accidentally, whilst employed in dissecting a dog; he afterwards extended his researches to other animals, and satisfied himself that they also existed in the human subject. Such deep root, however, had the Galenic theory of hematosis taken, that no advantage was derived by him from this splendid discovery, nor any advance made towards establishing the true theory. He thought that the lacteals united in the midst of the pancreas, whence they carried their contents to the liver, thus assigning to the lymphatics of this gland a direction the very reverse of that which they really follow. In 1628 the lymphatics of the mesentery were seen for the first time in the human subject, by Gassendi. A criminal who had been condemned to death was made to eat some time before his execution; in one hour and a half after his execution the abdomen was opened, and the mesentery was seen covered with lacteal vessels full of chyle. Gassendi could not believe these vessels to belong to a distinct system, in which incredulity the great Harvey himself shared. In 1649, Pecquet, a physician of Dieppe, rediscovered the thoracic duct, which had been forgotten since the time of Eustachius, and which he proved to be the trunk of the lacteals. Aselli's theory was now upset, and it was clearly ascertained that the white vessels of the mesentery poured their contents into the subclavian and jugular veins. It still, however, remained to be determined, what was the use of the vessels which extend from the liver to the mesentery, and which before Pecquet's time were looked on as the terminations of the entire mesenteric system. Glisson and Vesling cleared up this point by showing, from the arrangement of the valves, that the lymphatics in question go from the liver to the pancreas, and not *vice versâ*, as Aselli supposed, and, consequently, that they terminated, like all the

other lymphatics, in the thoracic duct. Up to this period the lymphatics were considered merely as agents of hematosis; the existence of general lymphatics was not even so much as suspected. That discovery is generally attributed to Rudbeck, a Swede. From this time the knowledge of the lymphatic system made rapid progress, by reason of the labours of Ruysch, Albinus, Meckel, the two Hunters, Hewson, Monro, Cruikshank, &c.

With respect to the *Origins of the Lymphatics* considerable obscurity prevails. Aselli's opinion was, that they commenced in absorbing pores on all the mucous surfaces, on all the cavities containing a liquid, on all the arteries, and veins, and excretory ducts; others thought that these vessels derived their origin from the arteries, and communicated with them. Our author details several experiments made on this subject by M. Panizza, the result of which is, that there is no direct communication between the lymphatics and veins, as M. Fhmann asserted. According to our author the cellular tissue is the principal point on which the lymphatic vessels arise; this is the soil into which their roots are implanted, and in the substance of which they ramify with particular character and particular forms. Accordingly, those organs into whose composition this tissue does not enter, such as nails, horns, the epidermis, hair, the enamel of the teeth, &c., do not give rise to any lymphatics. On this point the experiments and opinions of several distinguished anatomists are here given at full length by M. Breschet; but as a mere anatomical detail would be entirely out of place in a periodical, we refer the reader for it to the work itself. The same may said regarding the *Dispositions of the Lymphatics*, their *Valves*, the *Structure of the Lymphatic Ganglia*, and of the *Terminations of the Lymphatic System*. Chap. II. treats of the *Comparative Anatomy* of the Lymphatic System. We shall, however, for reasons sufficiently obvious, proceed to Chap. III., which treats of the *Physiology of the Lymphatic System*.

This system being, as we have already seen, totally unknown to the ancients, there will be no necessity to consider their opinions with respect to the functions performed in the animal economy by the vessels which constitute it. Hippocrates assigned to the veins the power of absorption, both in the circumambient air, and in the intestinal canal. Galen, as we have seen, believed that the alimentary substances were absorbed by the mesenteric veins, which carried them to the liver, whose business it was to convert them into blood. In the progress of time this Galenic doctrine of hematosis gained such dominion, that in the seventeenth century it completely retarded the progress of science, by drawing away the minds of anatomists from endeavouring to complete the history of the lacteals, their chief object now being to reconcile Aselli's discovery of the existence of these vessels, with an hypothesis which they really seemed afraid to submit to the test of examination.

There prevailed at the time two traditions, which were considered as so many articles of faith, namely, that of exclusive absorption by the veins, and that of the formation of blood by the liver. The latter opinion was easily maintained, until Pecquet proved that the lacteals did not terminate in the liver, but in the subclavian veins. With respect to the former of these opinions, it could only be supported either by considering the chyliferous vessels to be a particular species of veins, as Gassendi did, or by denying their existence altogether, a proceeding which we regret to find was adopted by our countryman, Harvey, so excellent an observer of nature, and himself the victim of so much persecution. The principal supporters of venous absorption were, Swammerdam, Boërhaave, P. F. Meckel, and Monro. The arguments adduced by these physiologists would not be worth the reader's attention at the present day.

One circumstance may be here noticed as not the least curious event in the history of physiology, we mean the necessity of endeavouring to prove in numberless ways the real fact of the absorption of chyle by the lacteals, a fact which might have been decicided at once by the mere testimony of the eyes, as those vessels are seen to swell, and change colour, some time after the animal has eaten.

By degrees the minds of men became accustomed to this new opinion, more particularly after the discovery of the general system of lymphatics, which it was impossible to confound with veins, and which are too numerous in the body to be denied the performance of some function. The ancient theory, however, was not abandoned altogether; a mixed opinion was formed, which divided the absorbing power between the two systems.

The Hunters' were the next who directed their attention to this subject. William Hunter has expressed some doubts with respect to the participation of the meseraic veins in the function of intestinal absorption; his brother John attacked the theory of venous absorption with much more boldness, and by means of experiments more varied, and more conclusive, than any of his predecessors'. With the details of these experiments we presume that our readers are already well acquainted, as also with those of Hewson, Sheldon, and Cruikshank, on the same point.

Up to this time the attention of physiologists seems to have been confined almost exclusively to the consideration of intestinal absorption, and it was only by induction that

they admitted the share which the general lymphatics had, with those of the mesentery, in the power of introducing foreign substances from without into the system. This power Schreger undertook to prove by experiments, which, though not meriting all the confidence due to those of Hunter, were still admitted as conclusive, and received yet further corroboration from Mascagni and Lauth.

The opinion that the lymphatics alone possess the power of absorbing, now ceased to meet any contradiction. Persons seemed, in a manner, to forget that the veins had till very lately participated in this prerogative, nay, that they had actually disputed with them the exclusive possession of it, when on the 7th of August, 1809, Magendie read before the Institute a memoir containing the results of experiments made by him in concert with M. Delille, from which he concluded that *the lymphatic vessels are not always the route followed by foreign substances in order to reach the sanguineous system*, but that, very probably, a direct absorption takes place also by the veins. The experiments instituted by Magendie, and from which he deduced the absorbing power of the veins, are so well known as to render it unnecessary to adduce them here. Professor Mayer has also admitted the absorbing power of the veins, conjointly with that of the lymphatic, after a series of experiments made on the lungs of different animals. He injected some ferro-cyanuret of potass by the trachea, after which traces of that salt were discovered much sooner in the left side of the heart than in the right side, which would not have occurred if it had first passed into the thoracic duct.* M. Ségalas went still farther than M. Magendie.† He has admitted that the power of absorbing other substances besides chyle, when introduced into the intestinal canal, was peculiarly confined to the veins; to which conclusion he was led by the following experiment: After separating a piece of intestine from the neighbouring portions by two incisions, he introduced into it an aqueous solution of the alcoholic extract of nux vomica, tied it at both ends, and replaced it in the abdomen, after having tied the arteries and veins going to it. No symptom of poisoning took place, even though he allowed a free artery to carry blood to it, and divided the corresponding vein; on the contrary, poisoning took place in the course of six minutes, as soon as the natural circulation became re-established.

In order to show the incredible rapidity with which absorption may take place, our author introduces an experiment of Müller. That experimenter stretched the recent bladder of a frog over the neck of a very small flask, containing a solution of ferro-cyanuret of potass; he then passed lightly over the membrane a brush dipped in a solution of sulphate of iron, and instantly inverted the flask; in one second a bluish spot manifested itself, which rapidly became of a deeper tint. Now, the bladder of a frog consists of several tunics, placed one upon the other, and is, therefore, much thicker than the delicate membrane which covers the exterior of the intestinal villosities, and which contains sanguineous capillaries, demonstrable by injection, independently, no doubt, of lymphatic capillaries, which are too fine and pellucid to be perceived. Thus, then, it may be admitted that traces of a substance in a state of solution may penetrate, in one second, through the superficial capillaries, and make their way even into the blood of a part deprived of its epidermis. Now, if we calculate the duration of a complete revolution of the blood, at three minutes, which Hering reduces still lower, *viz.*, to thirty seconds, it will be seen that that lapse of time is also sufficient for an absorbed substance to manifest its presence in points of the economy very remote from the place with which it is brought into contact. It is not necessary to renew, then, with Messrs. Home and Lippi, the obsolete hypothesis of a direct communication between the stomach and kidneys, in order to account for the celerity with which certain salts pass into the urine. The results obtained by the different experimenters above-mentioned have been partly confirmed and partly modified by M. Tiedemann and M. Gmelin. Those physiologists have ascertained that colouring matters introduced into the intestines, are not absorbed there by the lymphatics, though they are found in the urine and in the blood, which accords with the results of Hallé's and Magendie's experiments. They very seldom observed the passage of the salts into the chyle; only on one occasion did that liquid present traces of iron, in a horse to which they had given some green vitriol. M. Müller, in two experiments on frogs, the hind legs of which he had kept immersed in a solution of ferro-cyanuret of potass, only once found the lymph produce any re-action indicating the presence of a metal; the serum of the blood in this case also presented some, though less perceptible, traces of it.

From the experiments already mentioned, and others of a similar kind, our author comes to this conclusion,—that there are two completely undeniable facts. The first is, that the lymphatics of the mesentery absorb, in the intestines filled with the produce of digestion, not the chyle itself, but the organic materials of that liquid, and sometimes also foreign substances, not altered, but always at least in a state of solution, as certain salts, or in a state of minute division, as fatty bodies. The second fact is,

* Meckel, Archiv. tom. iii., p. 485.
† Journal de Physiol. Experimen.

that the lymphatics of all the parts of the body bring back to the heart a blood which differs from that carried by the arteries, principally in this, that it no longer contains red globules. Now, since we have not up to the present time been able to discover, notwithstanding our powerful means of magnifying, any communication between their origins, and the arteries, or veins, they cannot obtain possession of this liquid in any other way than that which is conventionally called "absorption," that is, that organic phenomenon whose effects we know without having discovered its cause. With respect to the question, whether the power of absorbing belongs exclusively to the lymphatics, or whether they share it with the veins, it seems to our author less difficult of solution than has been supposed. It is not necessary here to refer to those animals which are destitute of a lymphatic system, but which, nevertheless, can absorb; as it would be rash to found any induction on organizations which are so different from that of vertebrate animals. Neither does M. Breschet refer to the absorption of certain cerebral effusions, nor to that which takes place at the different stages of life, in the osseous tissue, nor to that which must necessarily follow the process of nutrition in the encephalon and eye, because it is very possible, and even very probable, that the bones, the brain, and the eye possess lymphatics; but it seems as well established as it can be made by experiment, that in man the veins and lymphatics communicate with one another in the glands, as they evidently do in other vertebrate animals, in different parts of the body. The only doubtful thing is the manner in which this communication takes place. We are inclined, however, to believe that it does not resemble those observed in birds, reptiles, and fishes, and which do not differ with respect to the mode, from the junction of the thoracic duct with the trunk of the subclavian. It seems, if not demonstrated, at least more than probable, that it does not take place by direct inosculations, which no person has seen, nor by open orifices at the extremity of the two systems, for no anatomist has discovered any such phenomenon; and, moreover, it is perfectly well known at present, that the sanguineous capillaries, arterial and venous, are uninterruptedly continuous one with the other, in all the regions of the body in which fine injections have been made. Thence it is by an absorbing force, similar to that possessed by the lymphatic radicles, that the veins must absorb the contents of the latter vessels in the glands. But if all probabilities are now united in favour of this hypothesis, how can we refuse to the veins the power of exercising everywhere that they exist, an influence with which they evidently appear to be endowed in one point? The only real difficulty consists in determining the limits and circumstances under which both systems employ this power; the direction given to experiments, and the facts hitherto acquired, do not as yet afford us any means of removing it. Be this matter as it may, to take from without, and feed the body with, substances which are calculated to repair those losses which are necessarily occasioned by nutrition; to bring back to the heart a portion of the blood not consumed by this latter function; and, finally, to introduce into the general mass of liquids those materials of the intimate texture of the organs which the exercise of the several functions has now rendered no longer useful; such are the three evident and ordinary functions of the lymphatic system. We know nothing, or almost nothing, of the manner in which it accomplishes these.

A portion of the food which has undergone the influence of digestion is indisputably absorbed by it, whilst it passes through the intestinal tube. It has been seen that the villi in whose tissue the radicles of the lymphatics arise, at least in part, present no opening on their surface, even when examined with the microscope. We cannot, then, admit that they absorb any thing else than substances in a state of solution, and this by means of imperceptible pores existing between the molecules of their organic tissue. More particularly, we are not permitted at the present day to suppose that the globules of the chyle penetrate these pores fully formed, for their size exceeds that of the globules of the blood, which the lymphatic do not admit. Again, since we see them, we should also be able to discover the apertures which afford them a passage. Yet, however near the internal surface of the intestine the chyle is observed, it is already found turbid, that is, loaded with globules. Whence, then, do those globules arise? We have no hesitation in acknowledging that we are entirely ignorant of the matter. Two hypotheses would explain them. We might suppose with Müller that they owe their origin to a special mode of association of the elements of the absorbed liquids; or with M. Dellinger, that they are occasioned by molecules detached from the tissue of the lymphatics. This latter opinion seems much less admissible than the other, when we consider the volume of the globules of the chyle, and their quantity, varying according to the nature of the aliments. What proves, moreover, that we are still far from possessing all the data necessary for solving this complicated and difficult problem is, that, if the nature of the aliment seems to exercise any influence on the physical appearance of the chyle, which is, in fact, much less turbid and opaque in the carnivorous mammifera than in the herbivorous, on the other hand, it is most frequently found limpid in birds*, whatever be the nature of their element.

* Muller, Physiologie, t. i., p. 540.

Our author next alludes to the absorption of gases by the lymphatics, which several physiologists have from time to time admitted, but respecting which he thinks nothing satisfactory has been ascertained.

The blood which has lost a certain quantity of its constituents, principally fibrine, having arrived at the extremity of the capillaries, divides into two portions. All its globules are introduced into the capillaries of the veins. With respect to the liquid which held them in suspension, and in which the fibrine is dissolved with the albumen and different salts, it partly returns by the venous system, partly by the lymphatic system. The passage into the veins is easily explained: there is a continuity between these vessels and the arteries, and a very considerable number of them have a diameter sufficient to admit the globules. But we have no such mode to account for that in the lymphatics. We are then reduced to mere conjecture. To suppose, for instance, either that the arteries allow their contents to transude into the parenchyma of the organs, where the lymphatics take it up, or that these contents penetrate from the one into the other, through the tissue of the parietes, which are situate at extremely small distances from one another, or even in perfect contact; still this latter passage is no less real than the other. The identity in the composition of the blood and lymph, with the exception of the globules, is sufficient to prove it. Besides, M. Müller ascertained that when the blood of frogs does not coagulate, as happens in summer, every time these reptiles pass eight days or more out of the water, coagulum is no longer produced in their lymph. It is, no doubt, to be regretted that accurate comparative experiments do not warrant us in pointing out those shades of composition which the blood must very probably present after having undergone this division between two different orders of vasa efferentia; but this is a question which more particularly interests the history of nutrition; and which, accordingly, is not immediately connected with our subject. We know still less with respect to the third function of the lymphatic system, that of bringing back into the general mass of liquids those worn-out materials no longer applicable to the structure of the several organs. There can scarcely be a doubt, however, that it performs this—its result presenting the phenomena of absorption. Perhaps we might here find a means of accounting for those peculiar globules, which Müller detected in the lymph, with which he traced them into the blood. But does the lymphatic system perform this function by itself, or does it share it with the venous capillaries?

On a question which is enveloped in darkness so dense, one can scarcely venture to hazard any conjectures. The effects of a ligature of the thoracic duct might perhaps warrant some. This ligature is fatal every time that the common trunk of the greatest number of the lymphatics does not communicate with any other veins except the subclavian: death takes place at the end of five or six days, according to Dupuytren; from nine to ten according to Sir A. Cooper, and in fifteen according to Duverney. Might we not, by means of experiments made on animals, so as to compare the time necessary to occasion death on the one hand by fasting, and on the other hand by ligature of the thoracic duct, obtain data which should throw some light on the part which the lymphatic system performs in the nutrition of the organs? M. Magendie states that it appeared to him that the quantity of the lymph increases according as the fasting is prolonged. Such a statement, which for other reasons seems to us more than probable, is of too much importance not to incite us to study it in its more minute details.

Our author here enumerates the various hypotheses which different physiologists have employed, in order to account for the introduction of liquids into the lymphatic vessels, or, in other words, their absorption; some likening it to suction, such as that of leeches; others, to an imbibition, such as that of sponges immersed in water; others, again, to an attraction, sometimes physical, and sometimes chemical, or mixed; others, again, admit an insensible organic sensibility and contractility, of a peculiar kind, in the mouths of the absorbents, a supposition not less arbitrary than the preceding; whilst others, again, refer the function to a sort of electrical action, more or less similar to that to which the phenomena of endosmosis and exostosis are attributed. The radicles of the lymphatics do not appear to be more passive than are the spongioles, which are placed at the extremity of the roots in vegetables; but we know no more of the action of the one than of the nature of the other. All that is certain, as our author observes, is, that the lymphatics do not take up everything indiscriminately, that they make a selection among the substances presented to them, and that even among these substances there are very few which do not undergo some modification, the mechanism of which we are totally ignorant of. It is also certain that this power has nothing in common with any of the forces which are seen to act in organic bodies, and that it disappears less quickly than the other organic powers; in particular, that it continues frequently after the abolition of muscular irritability, and even after the extinction of vital heat. To the opinions of Cruikshank, Walter, and Müller, who denied that the lymphatics absorb after death, Mr. Breschet opposes that of Mascagni, who states positively that he has observed this kind of absorption more than once; he even adds that it usually goes on for a length of time which varies from

twenty-six to forty-eight hours in children and in young persons, but does not last longer than from six to eight hours in adults. Schreger also says that he observed it in a child who had been forty hours dead. Magendie's experience also led him to the same conclusion.

M. Weber, in order to account for the absorption both of the veins and the lymphatics, has proposed an hypothesis the elements of which were suggested to him by the following experiment of Emmart.* If the abdominal aorta of an animal be tied, and after two incisions have been made in the foot, if some ferro-cyanuret of potass be introduced into one, and some false angustura into the other, the usual re-agents soon detect the presence of the cyanuret in the urine, but the augustura does not manifest any of its poisonous effects, though they display themselves, on the contrary, as soon as the ligature is removed from the aorta. This experiment has been varied in the following manner by Schnell: he tied the aorta of a rabbit between the origins of the superior mesenteric and crural arteries, so that the blood could no longer come to the foot; he then waited for some time, until the blood of the foot should return to the body: he then introduced some upas into a wound made in the thigh; no symptom of poisoning was developed; at the end of eight hours he tied the aorta, and the poison produced its effects. Schabel† and Westrumb‡ observed the same phenomena.

Hitherto physiologists had been very much at a loss to explain the results of this experiment. Weber attempts it by a series of suppositions.§ He admits that absorption takes place in two ways,—by a mechanical action of the vessels, and by an attraction exercised by the liquid contained within them. Now, as the experiments which have been just stated, prove that certain poisons do not act when the circulation is interrupted, whilst this circumstance does not prevent other substances from entering into the system, he supposes that the former of the two modes of absorption belongs to the lymphatics alone, which exercise it only when they are empty, and that the latter belongs to all the vessels, sanguineous and lymphatic, provided they have thin parietes; that a liquid fills their interior, and that this liquid performs a progressive movement. But all these hypotheses not being sufficient, he further supposes that the lymphatics continue to take up substances from without, when the interruption of the circulation no longer allows the veins to do so, but that among these substances some, such as the ferro-cyanuret of potash, make their way into the great circulation, whilst others, principally those of a vegetable nature, are arrested by the lymphatic glands, which alter and elaborate them, change their nature, and thus deprive them of their poisonous properties. This is, undoubtedly, a very striking instance of the facility with which hypotheses are admitted in physiology, and accumulated also, as occasion may require.

Our author having thus far considered the means whereby the lymph and chyle are introduced into the lymphatics, next directs his attention to consider the force by which those liquids are propelled in these vessels. No visible contractions are observed in them, as was supposed by Blumenbach. No movements, according to Müller, are perceived either in the intestinal villi of a living rabbit, or in the lymphatics of the mesentery, or in the duct in which they all terminate. The same remark was made by Bichet. Tiedemann and Gmelin saw the thoracic duct insensible to mechanical and chemical irritations, though Haller and Schreger stated the contrary; nor was Müller more fortunate, on applying the galvanic pile to a goat. Still, the impulsion which drives on the lymph from the branches to the trunks is so great, that after placing a ligature on the thoracic duct, Autenrieth, Carus, and Tiedemann saw it become so distended as to be ruptured, and its contents were forced out in a jet, through an opening made in it. Something, therefore, must go on in the vessel analogous to that which takes place in the serous vessels of plants. The propulsion of the liquid seems to be determined, in a great measure, by the initial force which acts at the very moment of its introduction. The phenomena presented on opening animals just after eating, clearly show that a tonic contraction of the lymphatics is not a matter to be disputed. Some are disposed to think that the play of the several organs contribute to this, and more particularly that of the neighbouring arteries, as also the influence of the peristaltic motion of the intestines; such circumstances, however, are too unimportant to admit of being erected into a general cause, though at the same time they may not be altogether destitute of action.

An attempt has been made in latter times to estimate the velocity with which the lymph moves. All that is known on the subject is, that it is not at all equal to that of the blood.

M. Magendie states, that on making an incision into the thoracic duct, in the neck of a middle-sized dog which had eaten some animal food, about half an ounce, at least, of liquid came out of the orifice during the first five minutes, and that the flowing continued, but much more slowly, so long as the formation of chyle lasted. M.

* Meckel, Archiv., tom. i., p. 178, 179.

† De effectibus veneni radicum veratri albi et hellebori nigri. Tubing. 1817.

‡ Physiologische Untersuchungen uber du Einsaugungskraft der venen. Hanov. 1825.

§ De Pulsu, resorptione, etc. Leipsic, 1834.

Collard de Martigny, after having emptied the thoracic duct, by compression, in a rabbit which had been fasting for twenty-four hours, observed it to become filled again, one time in seven minutes, and a second time in eight minutes. But however imperfect these observations may be, they possess considerable interest when compared with the approximating calculations already alluded to in reference to the rapidity of absorption in general; they furnish, in fact, one of the strongest arguments that can be advanced in favour of the participation of the veins in this latter function, and it is probable, by endeavouring to complete them, as also by combining them with the results of experiments regarding the comparison between the effects of a ligature on the thoracic duct, and those of death by famine, that we shall eventually be enabled to dissipate all the uncertainties which still hang over one of the finest and most important questions in physiology.

The lymphatics are not merely conducting tubes. The liquid which they convey undergoes considerable changes within them. But here again we relapse into that painful uncertainty which envelops all their history. We know not the nature of the changes which the lymph experiences in its passage; all that is known is, that on setting out from the intestine its consistence and coagulability go on continually increasing until it arrives in the thoracic duct, that very often, also, its colour inclines more or less to red, and that, consequently, the quantity of its fibrine progressively increases. With respect to the latter circumstance, particularly, there is an important distinction to be made between the chyle which, at the time of its admission, seems to contain little or no fibrine, (though M. Fohmann states that he found it coagulated on opening the body of a wild cat,) and the chyle of the other portions of the abdominal lymphatic system, in which that substance increases imperceptibly, according as it advances towards the venous system. But to what are these effects attributable? Is it to the absorption of a part of the contents of the lymphatics by the veins? We may form a conjecture on the matter, but we have no certainty. Is it to foreign additions, principally arising from the sanguineous system? This supposition may also be formed, since, in consequence of the injections of M. Panizza, which have displayed to us such admirable vascular networks on the parietes of the lymphatics; principally, however, in consequence of the beautiful observations of Müller on the composition of the lymph; for, all the lymphatics of the body bringing back fibrine in a state of solution, we can easily conceive that the latter goes on incessantly increasing, without its being necessary to admit the conversion of albumen into fibrine, for which there is no proof, however probable it may be, and which, moreover, may take place only under the influence of respiration. Perhaps it is one of the functions assigned to the lymphatic glands, to give more development to this action of the arterial system, the direct end and mechanism of which are alike unknown to us; for it cannot be supposed that their only use is to bring the lymphatic and venous system in more direct and more close relation one with the other. MM. Tiedemann and Gmelin assign to them, as their especial destination, the adding of cruor to the chyle, that is, the red-colouring matter of the blood; only it is to be regretted that these talented observers had not recourse to the microscope, without the use of which, in reference to the different sorts of globules, we are not now warranted in asserting any thing with respect to the nature of an animal liquid.

Our author, having thus far considered the physiology of the lymphatic system, next proceeds to detail the anormal arrangements of this system in its several divisions. He first considers the anormal forms of the vessels forming the receptaculum chyli; secondly, those of the receptaculum itself; and, thirdly, the anormalities of the thoracic duct. First, with respect to its form, direction, and relations; secondly, with respect to the *insulæ* which it presents in its course; thirdly, with respect to the manner in which it terminates in the venous system; and, lastly, with respect to the complete division of its upper part, and to its having in some instances been found double and treble. With respect to its form, Cruikshank states that its ordinary form is rectilinear. Several anatomists, however, are agreed that it very frequently presents, during its course, slight flexuosities. The minute detail of these, and of the other anomalies, which occasionally are seen in this system, would be entirely out of place in the pages of our journal; we shall therefore pass on to the consideration of the *pathology* of the lymphatic system given by our author, as being a subject more to our own taste, and one which will prove more interesting to our readers. The alterations of the lymphatic system M. Breschet divides into five principal varieties: first, the physical lesions of its tissue, which include dilatations, contractions, and wounds; secondly, acute and chronic inflammation of the lymphatic glands and vessels; thirdly, tuberculous, encephaloid, and melanotic degenerescences; fourthly, morbid, osseous, cartilaginous, and fungous productions; and, fifthly, changes in the lymph.

The lymphatics are sometimes so much dilated that their smallest branches may come to equal the size of the thoracic duct itself. Sœmmering saw an instance of this in the thigh of a woman whose knee was as-

chylosed: the lymphatic vessels of the diseased limb were so distended that the slightest puncture was sufficient to allow the lymph to escape. Wrisberg mentions a case where the dilatation of the lymphatic vessels was occasioned by the presence of a tumour in the abdomen. A very remarkable instance of morbid dilatation of the lymphatics was shown to our author by Dr. Amussat. The case is so interesting, both on account of the difficulty of its diagnosis, as well as on account of the nature of the change, that we are induced to present it to our readers. In the month of October, 1829, M. Amussat presented to the Academy a morbid preparation, taken from the body of a young man who had been very strong and muscular, and who died in the space of twenty-four hours. This person had a large tumour in each groin, which came on spontaneously about a year before. He was recommended to apply a double hernial bandage, in order to prevent an increase in the size of the tumours. He came to Paris in the beginning of the November of 1829, having made long journeys, which fatigued him very much. On returning home at night, he was in the habit of removing the bandage, in order to obtain some relief, which he sometimes experienced from lying on his belly. It should be observed, however, that he could not walk without the help of the compresses, as the tumours then became much more painful. On the 6th of November he was very well in the evening: the next morning, very acute pains were felt under the right breast and in the groin; respiration difficult, dry cough, face injected, headach, fever, shooting pains in the tumours. The patient became worse; tongue pale, and gradually becoming dry; marked sensibility in the epigastrium; no disposition to vomit; no hiccough; no alvine evacuations; respiration anxious and jerky; his words were badly articulated during expiration; pain of the side nearly gone; dull sound on the right side, inferiorly; tumors exquisitely sensible; redness on the left side, at the place occupied by the truss; urine very red; intellects perfect, when questions are put to him; still there is occasionally slight delirium; pupils dilated; during the night there was delirium and great anxiety; the patient endeavoured to leave the bed by force; in the morning the skin over the tumours was more red; some fluctuation was observable; abdomen tympanitic; the body was now livid, and retained the imprint of the fingers. M. Amussat was called in at ten o'clock in the morning; he was then very much sunk; he lay on his back, with his mouth open, and face of a purple hue; he complained of pains in the abdomen, and of difficulty of breathing; his ideas were incoherent, and he answered questions with difficulty; the abdomen was very sensible, and even more painful to the touch than the tumours. When the physician was about to give directions regarding the treatment to be adopted, he died.

The necropsy took place twenty-four hours after death. The tumours, though already diminished in size since the patient's death, were taken in plaster, and presented to the Academy. Numerous streaks over different parts of the surface of the body; skin in general ecchymosed. A delicate membrane covered the tumours, which still presented the impression of the bandage. After having removed this membrane there presented itself a knotty, uneven sac, which gave exit to purulent matter. The abdominal cavity contained a considerable quantity of bloody serum, but no pus; no trace of peritonitis. The dissection of the tumours satisfied the parties that there had been no intestinal, nor epiploic hernia. On the left side, the cyst containing pus extended into the crural sheath, as far as the lower third of the thigh. The purulent collection extended less downwards on the other side, but it also passed under the crural ring, which was not very much dilated. The peritoneum having been removed on the left side, an abscess was discovered, the pus of which seemed to have spread as far as the tumour. Pus was also found in the chest, which also, on the right side, contained at least one pound of serum, as red as pure blood. The left side contained a little of this liquid. The right lung, gorged with black and frothy blood, was adherent to its upper part. After inverting the thoracic viscera, some lymphatic vessels were discovered, which were obviously diseased. The dissection of these vessels was continued; their enlargement was such that they could be dilated with a kitchen-bellows. Their entrance into the subclavian vein was discovered. The iliac and crural masses of the lymphatic vessels were inflated with a straw, and then tied, and an enormous crural dilation was discovered, similar to a small hernial sac.

Another remarkable phenomenon in this case was, that the iliac ganglions had disappeared, and seemed to have been replaced by lymphatic vessels. No direct communication with the veins was observed. With respect to the *contractions* and *solutions of continuity* of the lymphatic vessels, there is nothing important to be observed. Respecting rupture of the lymphatic vessels, our author considers that this has been rather supposed than observed. Ackermann, who thought it took place in the glands, attributed scrofula to it; whilst Morton endeavoured to explain the development of phthisis by rupture of the lymphatic vessels of the lung. There have been, says our author, affections of the lymphatic vessels, as well as other diseases. The works of the moderns on this important system excited the attention of practitioners, and every one wished to contribute his share. Lym-

phatic affections were seen in every direction; and, as pathological anatomy was still in its infancy, hypothesis took the place of observation. Persons referred to the lymphatics, and to the lymph, a number of diseases which are foreign to them; new names were given to them; medical language became extended, without science acquiring more precision.

Our author next proceeds to consider *inflammation of the lymphatic vessels and ganglions*. Inflammation of these organs has been considered the source of a number of diseases, such as phthisis pulmonalis, *elephantiasis*, *phlegmatia alba dolens*, &c. Without attempting to seek what influence acute or chronic inflammation of the lymphatics may exercise on the other systems, he confines himself solely to the detail of the anatomical characters of the disease. When these vessels have become the seat of acute inflammation, they form so many red, tense, and painful cords; and when cut into, there is found beneath the skin a thick, condensed layer of cellular tissue, infiltrated with purulent serum, more or less sanguineous; there are also observed reddish, bosselated and uneven fibres, which converge towards and terminate in the inflamed ganglion. It has also been stated, that if the thoracic duct be the seat of disease, it is found larger than in the normal state, and that it appears as a tense and red cord between the vena azyos and aorta; that when the inflammation has been slight, the inner membrane is thickened; more dense than in the healthy state, and very friable; that with a more intense degree of inflammation, the canal becomes larger, its parietes are thickened, its cavity is distended with a liquid, the nature of which varies according to the degree of inflammation, and, lastly, that a plastic matter may be formed or deposited in it, which on becoming organized changes the vessel into an impervious cord. M. Andral has seen the thoracic duct, after being changed into a sort of fibrous cord, become entirely obliterated, to an extent corresponding with the body of the third, fourth, and fifth dorsal vertebræ; still, above this point of obliteration, it was filled with lymph, which was conveyed to it by a lymphatic vessel of considerable size, which, arising from the thoracic duct, a little below the place where its obliteration commenced, opened into it some lines above the place where its cavity reappeared. It has been frequently stated that pus has been found in the lymphatic vessels, and that its presence usually results from idiopathic inflammation, though there is not always a proof of the existence of inflammation. The most common case is the coincidence of a purulent deposition in some part of the body with which the lymphatic vessels have been in contact.

Dupuytren cites the case of a woman who had an enormous tumour on the upper part of the thigh, with fluctuation, on examining which, an incision being made in the skin near the tumour, white points were observed on the lips of the incision; then the subcutaneous cellular tissue was found to be traversed by large lymphatic vessels, gorged with pus, and this was continued even so far as the lumbar ganglia. The thoracic duct was still healthy. The presence of pus in the lymphatics sometimes coincides with suppuration of a parenchymatous organ. Andral saw, in a case of a large abscess in the kidneys, that the thoracic duct was red and inflamed, and that it contained pus even so far as its entrance into the subclavian vein. In a woman who died from peritonitis, the thoracic duct was found inflamed; its parietes were thickened and red, and its cavity was distended with pus. Inflammation of the veins may also be complicated with the existence of pus in the lymphatics. A woman died twenty-six hours after natural labour; there was found inflammation of the veins, and pus was detected in the lymphatics. The pelvic ganglia were swollen, and the correspondin lymphatics were gorged with pus; som were also found in the thoracic duct itsel Some modern anatomists, on perceiving pu in the lymphatic vessels, without any appa rent lesions of the corresponding part o their parietes, have been disposed to admit its having been conveyed thither by absorption. Our author objects to this, which he conceives to be impossible, the globules of pus being so much larger than those of lymph, chyle, or blood. In this opinion he finds support in the opinions of Magendie and Müller, who do not believe that the lymphatic vessels can absorb pus. With respect to the pus found in those vessels, it must, he says, have come either from inflammation of their parietes, or from some purulent deposition external to them; in the latter case the pus may have made its way into them by a solution of continuity of some part of their parietes, produced by some accidental cause.

Some anatomists having succeeded in driving mercury into the lymphatic vessels of inflamed ganglia, thence inferred that the cellular tissue of these glands alone was the seat of inflammation. To this our author objects, saying, on the one hand, that the passage of injections through inflamed ganglia is far from being uniform; and, on the other hand, that, even if it were, it would not prove the absence of inflammation in the ganglionic lymphatic vessels, as obliteration of a vessel is not the necessary and invariable consequence of inflammation.

The little sensibility of the different parts of the lymphatic system, the fineness and paucity of the blood vessels which they receive, seem to predispose them, in a particular manner, to chronic inflammation, and

to the different changes which are the consequences of it. When a portion of this system becomes the seat of slow irritation, the anatomical changes of tissue are reduced to a slight swelling, and to an increase of thickness. If the irritation disappear before the tissues have become seriously altered, resolution takes place, and pathological anatomy detects no trace of any change in the vessel or ganglion.

When chronic irritation continues for a long time, but is slight and obscure, the organic elements of the lymphatic system become tumefied in different degrees; the tissue becomes dense, and loses its original colour; in a word, it becomes the seat of an induration, the anatomical characters of which vary according as it occupies the ducts or the ganglia. Chronic inflammation of the lymphatic vessels, or ganglia, may, instead of producing induration, bring on suppuration. This occurs more frequently, however, in the ganglia than in the lymphatic vessels; when it evinces a disposition to take place, the affected tissue becomes greyish, its density diminishes, the surrounding cellular tissue becomes infiltrated, and small purulent depositions are soon observed to form.

Degenerescences of the lymphatic vessels and ganglia.—The lymphatic system is, according to our author, that in which *tuberculous* matter is most frequently deposited. The researches of M. Cruveilhier and Andral support his views in this particular. The latter pathologist states that he found tuberculous matter even within the lymphatic vessels, and cites the case of a woman who died of cancer of the uterus, in whose abdomen some indurated ganglia were found, into which a considerable number of lymphatic vessels entered, which presented, at different parts, some white points, consisting of a white-coloured matter, of moderate consistence, and readily crumbling under the finger. The lymphatic ganglia are much more susceptible than their vessels of undergoing the tuberculous degenerescence; nor do they all appear to be equally disposed to it. With respect to this susceptibility, Laennec arranges them in the following order: bronchial, mediastinal, cervical, and mesenteric ganglia. This tuberculous matter is deposited either in the form of infiltration, or in a mass. The former is frequent in the bronchial ganglia, the latter is principally observed in the abdominal ganglia.

Melanosis.—The ganglia are more subject to melanosis than has been hitherto supposed. Several black tumours formerly observed, were, no doubt, ganglia in a state of melanosis. Melanotic degenerescence has been observed by our author several times in the different tissues of the human subject, and of animals. In horses particularly, and chiefly those with grey or white hair, this morbid alteration is very common. He found all the abdominal ganglia in several horses attacked by melanosis, which covered the anterior surface of the spine with black messes of considerable size, and concealed the thoracic duct.

The morbid products of the lymphatic system mentioned by our author are *fungous growths* and *calcareous depositions.* When endeavouring to inject the thoracic duct in the dead body it has been rendered impossible to do so, in consequence of these fungous growths obstructing the canal. They have been found implanted on the parietes of the duct about half an inch above the receptaculum chyli. Calcareous depositions, or ossifications, may have their seat both in the thoracic duct and in the branches which go to it. It is chiefly, however, in the lymphatic ganglia, and more especially in those of the bronchi, that these calcareous depositions are found. Advanced age seems to favour this alteration of the ganglionic tissue. The development of these ossifications, according to Meckel, takes place from without inwards. The coincidence of calcareous concretions, with other morbid alterations, chiefly with those of the osseous system, may not be devoid of interest to the physiologist.

Our author concludes his work with some observations on morbid *alterations of the lymph*, but the little that is as yet known on this matter, at least with any degree of certainty, is a sufficient reason for our now closing our analysis of this very interesting and important work.

ORNITHOLOGICAL SOCIETY OF LONDON.

We observe, with approbation, the formation of a Society under this name,—President, the Earl of Liverpool; the Duke of Bedford, Vice-President; H. Chester, Esq. Secretary. The immediate objects of the Society are to provide in the public parks a free exhibition of living birds, and to hold periodical meetings for the reading of ornithological papers, the exhibition of specimens, &c., encouraging oral discussions, to form an ornithological library, and to circulate amongst the members ornithological periodicals.

If the funds of the Society prove sufficient, the rooms will gradually be enriched by the acquisition of a museum, commencing with British birds; and, ultimately, if the public support the undertaking, the Society will embrace every object of a National Ornithological Society, including the breeding of domestic birds, and the distribution of them amongst the members.

The Secretary, 6, Stafford-row, Pimlico.

MR. BEDINGFIELD'S CASE OF RUPTURE OF THE BLADDER.

To the Editor of THE LANCET.

SIR:—I cannot help sending you a few lines on the subject of the dignified case of, "as it were, *spontaneous* rupture of the urinary bladder," inserted in the last number of THE LANCET, by Mr. Bedingfield.

We are told that "Mrs. F. had an easy and natural labour of about two hours' duration." "The placenta immediately followed," and all seemed well; but, alas! the poor woman sank on the fourth day after the labour, from an, "as it were," *spontaneous* rupture of the urinary viscus.

Now, as this case is intended to present a *novelty*, mark the circumstances. The labour continued for *two* hours; *twelve* hours afterwards the patient was attacked with pains. We thus, therefore, have got the length of *fourteen* hours. We are, then, to pass on to the *next day*, which we may reasonably say would make the number at least *thirty hours* from the commencement of the labour, without a statement that one drop of urine had, during that period, passed from the bladder. I might lay my pen down here; but let me inquire, How recently before labour commenced was the bladder emptied? Was it at all emptied during the labour? Was it emptied during the twelve succeeding hours? Was any urine passed between that and the following day? Any on the following day? Was any catheter introduced during the labour, or in the course of at least the next thirty hours? None; but the patient had "made *several ineffectual attempts* to expel the contents of the bladder!" These failing, and no artificial means having been resorted to in aid of them, the bladder thinks *proper to burst*, as well it might; and then, forsooth, a *vein in the arm* is to be opened, but that failing to heal the injury, the urethra is *at last* to be explored, with, of course, the natural result under such circumstances! I wonder if any of our professional brethren ever heard of a cannon bursting when it was fired off, or an overcharged mine exploding. If not, they may now safely fancy that such an "as it were" *spontaneous* event may, by possibility, take place. Looking at Mr. Bedingfield's statements, and contrasting them, I would ask, could a boy of eight years of age fail to come to that conclusion to which *alone* they must lead every reader? Gloss over, indeed, in the sequel of the report, *over-distension!* what single ground, or what shade, for the inference is there? May it be the last of such "as it were" cases that Mr. B. may meet with. I am, Sir, yours respectfully,

M.D., & M.R.C.S.L.

London, June 6, 1837.

SPECIMEN OF A POOR-LAW-COMMISSIONER-WORK-HOUSE-SURGEON.

To the Editor of THE LANCET.

SIR:—The governors and guardians of the poor of Camberwell, in the "plenitude of their power," ordained in March last, that no gentleman should be elected to the office of parochial surgeon who did not support the "Independent Medical Clubs:" notwithstanding this inducement, but *few* converts were made, and out of only six or seven candidates four, were elected. I inclose the circular of the gentleman who, on that occasion, *was elected surgeon to the poor-house;* but whether he supplies the paupers with this "esteemed pill," or whether, in his contract with the "independent servants and mechanics," he includes this valuable medicine, I cannot at present inform you. I am, Sir, your obedient servant,

ANTI-HUMBUG.

June 5th, 1837.

(*Verbatim copy.*)

KING'S

ESTEEMED

COUGH AND EXPECTORATING PILLS.

For disorders of the heart and lungs, namely, asthma, tightness of the chest, oppressive breathing, hoarseness, influenza, irritation of the throat, &c.

It would be superfluous and arrogant to assume these pills possess the property of curing that terrific disease, called consumption, which has, in most instances, baffled the skill of all; but it is reasonable to suppose a medicine might be found which, if applied in the earlier stage, would prevent the disease acquiring that malignant form, it is for this purpose these pills are particularly recommended to the public; and as they act so specifically on the air passages of the lungs, allaying all irritation, and removing the mucus contained therein, causing free and easy expectoration, will be found, in most instances, a speedy and effectual remedy, and in all cases will not fail to give considerable relief to the sufferer when past cure.

DIRECTIONS.

In ordinary cases, two taken night and morning will in general suffice, but where the disease is chronic, two may be taken, as required.

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DEATHS FROM ADMINISTERING "GODFREY'S CORDIAL."

To the Editor of THE LANCET.

SIR:—In page 209 of my edition of the new London Pharmacopœia, you will find an exposition of the real cause of so many deaths among infants from the use of spurious preparations of syrup of poppies. In the *News* of last week is an account of an inquest upon the body of an infant destroyed by a preparation sold as "Godfrey's cordial," but which was stated in evidence to consist of sugar, water, and opium. Now, Sir, by reference to either of our coroners within the bills of mortality, you will learn that such cases are of frequent occurrence. I estimate them at at least twelve or fourteen per annum, in London alone. Now, take this as the average for twenty years, and you have upwards of one hundred and fifty children sacrificed within that period. I ask you to subjoin my note on the Syrup of Poppies, and you may rest assured that you will save many lives by giving the matter publicity. Your humble servant,

G. F. COLLIER.

32, Spring Gardens,
June 5, 1837.

"*Remedial Use.*—A soothing anodyne, for the most part producing less subsequent cerebral disturbance than opium; and therefore preferable for children. There is a bad practice in the retail trade (which is well worthy of the serious attention of the profession, and one which ought not to have been disregarded by the College) of selling various substitutes for this syrup. One is prepared with laudanum and treacle; another with extract of poppies in syrup; and both made of inferior narcotic strength to the preceding. Now, let the dispensing chemist mark the consequence. Numerous fatal cases have occurred, in which mothers, who had been in the habit of being supplied with the spurious syrup, have casually applied to houses where the syrup is prepared by the College formula; and, having administered a teaspoonful of this last to their fretful children, or perhaps a second, just as they were wont to do with the weaker remedy, it has induced narcosis, and death has ensued in a few hours. The Editor has himself attended inquests of this nature, and he appeals to the Coroners of London, whether a year elapses without similar occurrences. The intention of the dispensing chemist in making a weaker article is praiseworthy; for, knowing that mothers habitually exhibit it to their children, he is afraid to sell them the stronger syrup. Thus the parent is deceived in her estimation of the dose, and the deception is fatal. These errors, too, are likely to occur among practitioners themselves; for, if they consult the popular works on pharmacy, they will meet with evidence the most discrepant. By one author an ounce of the syrup is stated to be an equivalent to a grain of opium; by another, half an ounce; by another, three drachms; by another two drachms. Is this a subject unworthy of the Censors' attention? Their best friends will tell them that, go where they will, whenever and wherever their college is spoken of, every well-informed gentleman will express his surprise at their apathetic neglect of the public health. But let a question arise on the diversion of five farthings out of the exchequer of Pall Mall East, and who so active as the Censors' Board?"

IMPERFECT INQUESTS.

To the Editor of THE LANCET.

SIR:—Scarcely a week passes but you have some communication concerning the inefficient manner in which coroner's inquests are conducted, and of verdicts given without the slightest medical evidence. I think it the duty of every medical practitioner who is called upon to state his opinion on any case of sudden death, and whose evidence is not called for at *the inquest*, to send you the particulars, in order to show you the want of consideration for his time, and the paltry evasion of your salutary Bill, which has regulated the certainty of his remuneration. For instance,—I am requested to see an elderly female, who has been living alone, and who I find dead, lying on her back, her head in a pail, her arms folded over her chest, her fingers contracted, her legs drawn towards the trunk: a jury is summoned, and an inquest is held on the body. The important points of the case are not inquired into, how she fell, or how her head got in that situation. Surely these are points for medical investigation, and evidence on them is required. But *the coroner* now settles these questions. Formerly our attendance was required on all occasions; now the medical evidence is generally anticipated. By adding this instance to the others, at your earliest convenience, you will oblige, Sir, your obedient servant,

WM. HARVEY.

42, Great Queen-street, Lincoln's-inn-fields.
June 7th, 1837.

*** Every beneficial statute will be evaded by persons who are interested in breaking the law, if the public unconcernedly suffer the wrong to be committed. The remedy for the abuse under consideration we have already pointed out. The coroner is, confessedly, the instrument of the mischief. Let him be once mulcted of his fee for presiding at an imperfect inquest, and he will conduct himself differently on future occasions.

THE VOMITING PRODUCED BY THE ERGOT OF RYE.

To the Editor of THE LANCET.

SIR:—In perusing the cases of protracted labour, by Mr. Raleigh, in THE LANCET of the 13th of May, I am induced to question the alleged action of the ergot of rye in the case which is reported to strengthen the opinion as to its effects as the cause of the uterus being stimulated to contract, and to refer contraction to the violent action of the diaphragm, during vomiting, which, it is not improbable, by coming in contact with the fundus of the uterus, or by causing other viscera so to do, was the principal cause of uterine contractions being more vigorously excited. I have particularly remarked not less than thirty similar cases, where vomiting succeeded immediately after the exhibition of the first dose of ergot (usually half a drachm), that the fluid ejected evidently containing the whole, or, at least, the greater part of the dose, the uterus being stimulated to as active contractions as if the whole dose had been retained. This leads me to conclude, that in the majority of cases where the ergot is exhibited, either in combination with laudanum, or alone, and vomiting succeeds, the vomiting is the source of the renewed contractions, and not the specific action of the ergot. I am, Sir, your most obedient servant,

THOMAS FOSTER SAGAR, Surgeon.

Leeds, May 23, 1837.

TENURE OF MEDICAL OFFICES IN THE UNIONS.

To the Editor of THE LANCET.

SIR:—I have read the correspondence in a late number of your Journal, between Mr. Webster, the president of the *British Medical Association*, and the Poor Law Commissioners, and was greatly surprised to find that, in the answer to the 3d query of Mr. Webster (viz.), "Are such appointments considered to be held during good behaviour? Are they annual appointments as under the old law?" the Commissioners say, that "The appointments of medical officers are annual."

At the time of the formation of the Strand Union, I was a candidate for the office of surgeon to one of the districts, and, previous to my entering on my canvass, I had the following correspondence with the Poor Law Commissioners, as to the permanency of the appointment:—

"1, Henrietta-street, Covent-garden,
"April 6, 1836.

"GENTLEMEN:—As it is my intention to offer myself as a candidate for the office of surgeon to one of the districts of the Strand Union, may I take the liberty of inquiring whether, in the event of my election, the appointment be a permanent or an annual one, and whether any future Board of Guardians would have the power of removing me? I am, Gentlemen, your obedient servant,

"JOHN WETHERFIELD.

"To the Poor Law Commissioners for England and Wales."

"Poor Law Commission Office,
Somerset House, April 11, 1836.

"SIR:—The Poor Law Commissioners for England and Wales have to acknowleged the receipt of your letter of the 6th inst., and in reply to your inquiry they desire to state, that the appointments of the paid officers of a Union are not annual, but during good behaviour, or until the Commissioners shall have cause to determine them. Signed by order of the Board,

"E. CHADWICK,
"Secretary.

"To John Wetherfield, Esq., 1, Henrietta-street, Covent-garden."

This will show pretty plainly to the profession and the public, that the Commissioners themselves are unacquainted with the law. I have in my possession the original letter of the Commissioners for the inspection of any professional gentleman, if a doubt should exist as to the correctness of my statement. I am, Sir, your obedient servant,

May 29, 1837. JOHN WETHERFIELD.

A CALEDONIAN SURGICAL REPORT.

"EXTRAORDINARY SURGICAL OPERATION.—In passing along the South Bridge yesterday forenoon, our attention was arrested by a great crowd of gentlemen, at the gate of the *Royal Infirmary*, pressing inward. Joining in the crowd, we were carried along with it to the surgical hospital, where we found the operating theatre crammed to excess, chiefly by medical gentlemen and students; amongst these we recognized Sir George Ballingall, Dr. Maclagan, Mr. Newbigging, Dr. Campbell, the surgeons of the 14th Light Dragoons and 42nd Regiment, besides many country surgeons. The excitement we have described was occasioned by the knowledge that an operation never performed in Great Britain was to be done upon a young man by Professor Lizars. The case was what is technically called aneurysm of the subclavian artery, so near the heart that the first large trunk required to be tied, namely, the *arteria innominata*. The young man, a carter from Dalkeith, was placed upon the table, and the Professor commenced by making an incision in the neck, and progressively cut down to the

artery, when the ligature was applied. The operation was completely successful. The patient, who bore it with uncommon fortitude, was only on the table for fifteen minutes altogether. This, as we have already said, is the first operation of the kind which has been attempted in Great Britain. We understand that it was once successfully performed at Berlin by Dr. Græfe, and once in New York by Dr. Mott."—*Caledonian Mercury*, June 1.

Sal Copaibæ.—In reply to some inquiries respecting the medicine mentioned in last week's Lancet, page 384, we can only present to our correspondents the following extract from a letter, read by Dr. Elliotson, to the students at the *North London Hospital*, written by the preparer of the salt, Mr. Benjamin Kemplay, surgeon, of Leeds, formerly a pupil at that institution:—"I have discovered a new salt in copaiba, which seems to be one of the best expectorants in consumption, and in cough attended with discharge resembling pus, after pneumonia. It is highly useful in gonorrhœa. With the subcarbonate of soda it speedily relieves the dysyria, and the urine becomes as sweet as sugar. Does this throw any light on the question relative to the sugar of diabetes? A bitter combined with an alkali thus forms a sweet soda, and urea does the same. I have also obtained a substance of a stearinaceous nature, which seems to check the urinary secretion, but it is not of the same therapeutic use as the sal copaibæ, though, perhaps, it may increase its powers in those who make a large quantity of urine after taking wine, or liquors, of which gonorrhœa patients seem particularly fond. I have called the sal copaibæ the tonic of the mucous membranes. I shall not advertise it, or sell it as a patent medicine, though I have spent much time and money in its production."

The medicine may be procured of Messrs. Bell and Co., chemists, Oxford-street. One of the remarks of the ingenious inventor is amusing. In calling the sal copaibæ "the tonic of the mucous membranes," we are reminded of the cockney who possessed a greyhound, named *Swift*, but wanting a dog to guard his shop, he cut his tail short, said he was a mastiff, and called him *Towser*.

Electricity.—The following effect of electricity may be worthy of notice:—About six weeks ago I intentionally received, from an electrifying machine, several smart shocks on the knuckles of my right-hand fingers. A day or two afterwards a very remarkable redness appeared on the knuckles, attended with considerable pain and swelling of the joints, which, having lasted for a fortnight, then gradually ceased. Is not this result of electric shocks unusual?
May 10, 1837. Tyro.

THE LANCET.

London, Saturday, June 10, 1837.

Within a few hours of the time when this Journal is usually sent to the press, we received the following communication from Mr. Denis Phelan and Dr. Nugent, two gentlemen who are acting in London as deputies from the medical practitioners of Munster. In order to give insertion to this letter, and publish it without delay, we have omitted some general strictures which we had prepared on the measures which have been proposed by the government. The zeal and intelligence which have been so strongly displayed by Mr. Phelan and Dr. Nugent, in the arduous duty in which they have so long been engaged, entitle their remarks to receive the earliest consideration of the profession, both in England and in Ireland, and it certainly is of importance to show what are their sentiments with respect to the 47th clause of the Irish Poor Law Bill, as well as the provisions of the Irish Medical Charities' Bill. Here, then, we insert the communication of those gentlemen, and shall afterwards offer a few observations on the important subjects to which it relates:—

IRISH MEDICAL CHARITIES' BILL.

To the Editor of The Lancet.

Sir:—In The Lancet of the 3rd instant, you observe, with reference to the Medical Charities' Bill (for Ireland), that "the effect of this Bill must be, if ever such an odious measure shall be enacted into a law, to insult and enthral the whole body of Irish practitioners, and, ultimately, the whole medical fraternity of England and Scotland."

Considering it important that this subject should be clearly understood by the profession in both countries, but more particularly in Ireland, we beg leave to call your attention, and that of your readers, to the real state of the case,—a circumstance which the position in which we have been placed by a considerable portion of the latter, renders, on our part, at this moment, an imperative duty.

On reference to the Medical Charities Bill it will be seen, first, that the medical inspectors are to be *appointed and removed*, not by the Poor Law Commissioners, but by the Lord Lieutenant; and, secondly, that those inspectors are not only fully empowered to sit as a Board, and to "make general regulations respecting the medical care of patients in infirmaries," &c. &c., but, in addition, (mark!) "such other rules and regulations for the general management of such institutions, as they (the medical inspectors) shall think proper, and shall have power, from time to time, to alter such regulations."

We have reason to believe that it is intended to propose, (and most probably the proposal will be carried,) that such general rules and regulations shall be subject to the approval of the Lord Lieutenant, or of the Secretary for the Home Department.

Let us now inquire what the powers of the Poor Law Commissioners are, in respect to these charities.

By the 8th clause, they are authorized "to exercise a general superintendence" over all public medical charities, "and over the said medical inspectors;" and by the 47th clause of the Poor Relief Bill (Ireland) they are *merely* empowered to visit, and inspect, and inquire into, the management of, every public hospital, &c., and to require from all persons in whom any property belonging to any such institution has been vested, to give an account of the same, and to issue orders for enforcing obedience to the charters, by-laws, &c., and for the government of every such public medical charity, so that it shall be conducted *according to the existing statutes, wills, &c.*

That some such authority ought to be given to some responsible body is universally admitted. And it is but right to remark, that many with whom we have conversed think the Poor Law Commissioners the fittest to exercise it; the more especially as it is proposed that, after some time, the funds for all these institutions, or, rather, as much as may be necessary, in addition to the subscriptions, shall be raised as a portion of the poor-rate.

By these clauses of both Bills, then, it is evident that the Poor Law Commissioners are not to have the least power to make any rules or regulations for the medical care of patients, or for the general management of any one class of the public medical charities of Ireland; but, on the contrary, that such powers are proposed to be vested in the medical inspectors, as the persons most likely to be best conversant with the subject.

This Bill, it will also be observed, proposes to establish an important principle, that the power of regulating the *public* medical charities of a country shall be entrusted to members of the medical profession, responsible to the public and to the government. That the practical adoption of such a principle will meet the wishes of the Irish practitioners we entertain no doubt.

Your insertion of this letter in the forthcoming Number of THE LANCET will oblige, Sir, your very obedient humble servants,

DENIS PHELAN, Surgeon.
N. D. NUGENT, M.D.
Deputies from the Medical Profession in Munster.

33, Duke-street, St. James's,
June 7th, 1837.

A very few words will prove that Mr. PHELAN and Dr. NUGENT have been deceived, either by the ministers or by some of their agents,—probably by the Poor Law Commissioners themselves; for those grasping despots of Somerset-house are trying to contaminate, with their pestilential breath, the offices of every charitable medical institution in the empire. The members of the profession in *England* know these men well, and have reason to curse the day when Parliament invested them with authority. The yoke is now about to be fastened upon the necks of our brethren in *Ireland*. The prospect is an evil one.

What is the history of the proceedings before us? Two Bills were introduced into the House of Commons, for the declared purposes of giving relief to the destitute population of Ireland, and for the better regulation of the hospitals, infirmaries, and dispensaries, and all other medical charities, of Ireland. The Irish Poor Relief Bill has been before the House of Commons during not less than two months. It was read a second time several weeks since, and forty-two of the clauses had been discussed and amended in Committee by 12 o'clock on Friday night, June 2nd. The Medical Charities' Bill, on the other hand, had only been in the House of Commons ten or twelve days. Leave was obtained to bring in the Bill, without discussion or explanation. The Bill was read a first time without discussion, and stood amongst the Orders of the Day for a second reading on Thursday se'nnight, when the principles, and the chief provisions, of the Bill, in conformity with the

customary practice of the House, ought to have been fully debated. As, however, there were not forty members present at 4 o'clock, there was "no House" on that evening. Accordingly, in the printed "Votes" of the House, the Irish Medical Charities' Bill was set down on the following day as "a dropped order," standing in that form merely that another day might be fixed for the second reading of the Bill, and, of course, for discussing the principles of the measure. But what was done? Instead of appointing the second reading at a future period, this important Bill was actually read a second time, without remark or discussion, at half an hour after one o'clock on Saturday morning, at a time, probably, when there were not thirty members in the House, and within a few minutes subsequently to our departure from the House for the night, at which period nothing was ostensibly left to be done but to go through a few customary forms previous to the Speaker leaving the chair. It was impossible that any one could suspect that a Bill of this serious description would be read at such an hour of the night, or, rather, of the morning, when it stood on the paper merely as a "dropped order." We can only blame one person in the matter, and that individual is Lord MORPETH, the Secretary for Ireland. His Lordship was called to account for his conduct on Monday night last, when, certainly, he made a very full and ample apology, but the concession could not unread the Bill. It had passed through two of its stages, and now stands for a Committee. We may observe, that when we quitted the House, at a few minutes before one o'clock on Friday night, we had been uninterruptedly engaged under the roof of that establishment during exactly thirteen hours and a quarter.

On Monday last the House again went into Committee on the Irish Poor Relief Bill, and when the 47th clause was called on for discussion, we directed the attention of the House to the principle of that clause, noticing that it was precisely identical with the principle of the Irish Medical Charities' Bill,—explained to the House the unpardonably irregular manner in which the last-mentioned measure had been read as a "Dropped Order of the Day," (long after midnight on the preceding Friday)—and entreated, therefore, that this clause, as it stood perfectly distinct in principle from every other section of the Bill, might be deferred until the Irish Medical Charities' Bill was discussed. Finally, we moved that the consideration of the clause should be postponed. The proposition was energetically supported by Mr. O'CONNELL. The Committee subsequently divided on the question, when the names of the gentlemen who voted in favour of the motion stood as follows; *Ayes* 13, *Noes* 109:—

Bridgeman, Hewitt
Crawford, William Sharman
Ferguson, Sir Robert A. (Derry)
Fitzsimon, Chris. (Dublin County)
Musgrave, Sir Richard
O'Brien, W. Smith (Limer. Co.)
O'Connell, John (Youghal)
O'Connell, M. J. (Kerry County)
O'Connell, Morgan (Meath)
Ruthven, Edward
Vigors, Nicholas Aylward
Warburton, Henry
Wyse, Thomas
Tellers for the Ayes, Mr. Wakley and Mr. O'Connell.

A further resistance was strenuously offered to the adoption of the clause. The opposition, however, was unsuccessful, and the clause has now passed the Committee, and stands among the adopted sections of, the Irish Poor Law Bill.

In the letter which we have just printed Mr. PHELAN and Dr. NUGENT state that the rules and regulations for the government of the medical charities in Ireland are to be made by the medical inspectors. Mr. PHELAN and Dr. NUGENT further state, that by the forty-seventh clause of the Poor Relief Bill, the Commissioners are *merely* empowered—(this word being written by Messrs. PHELAN and NUGENT themselves in *italics*)—*are merely* empowered to visit, and inquire and inspect into the management of, every hospital. It is unnecessary that we should re-quote the whole of the passage in the letter; but the writers could scarcely have

read to the end of the clause, or they would not have fallen into the extraordinary mistake which they have committed. We think it right, therefore, to re-insert the whole of the clause in this place, printing that portion of it to which Mr. PHELAN and Dr. NUGENT have *not* referred, in *italic* characters:—

"47. And be it enacted, that the commissioners shall, and are hereby authorized and required, from time to time to visit and inspect and inquire into the management of every hospital, asylum, infirmary, dispensary, mendicity, or other charitable institution (not being an institution dedicated exclusively to religious purposes, or a school), not wholly supported by voluntary contributions, and to require from all persons in whom any estate, property or funds belonging to or held in trust for any such hospital, asylum, infirmary, dispensary, mendicity, or other charitable institution, shall be vested, or who shall be in the receipt of rents, profits, or income of any such estate, property, or funds, a true account in writing of the place where such estate may be situate, or in what mode or on what security such other property or funds may be invested, with such detail of the rents, profits, and income thereof, and the appropriation of the same, and of all other particulars relating thereto, as the Commissioners shall think fit; and that the Commissioners may from time to time, as they may see fit, make and issue all such orders as they shall think proper for enforcing obedience to, or conformity with, the statutes, charters, deeds of foundation or endowment, wills of donors, or bye-laws by which any such hospital, asylum, infirmary, dispensary, mendicity, or other charitable institution as aforesaid should by law be governed, and with the lawful objects and purposes of its foundation, *and also for the* GOVERNMENT *of every such hospital, asylum, infirmary, dispensary, mendicity, and other charitable institution, and the* OFFICERS *thereof, as the Commissioners may deem necessary for the prevention of any* CONFLICT *between the* OBJECTS *and purposes of any institution, and the objects and purposes of this Act.*"

This clause, be it observed, has passed the Committee of the House of Commons, and was carried by an overwhelming majority; a majority, in fact, of ten to one. By it the *Commissioners*, in addition to their other extraordinary powers, are authorised to make rules and regulations for the *government of the* OFFICERS *of every hospital, infirmary, asylum, and dispensary in Ireland.* And, in truth, by the words, "to prevent any CONFLICT between the OBJECTS of any institution, and the objects and purposes of the Poor Relief (Ireland) Act," the Commissioners are authorised to put the officers of the hospital, and all the other medical charities of Ireland, upon the system which they are on the eve of adopting for the government of the gaols called "workhouses," which they are about to establish in the unions. Aye, there is to be "*no conflict.*" In other words, the system of tyranny, of oppression, of restriction, and of moderate diet and low salaries, to be uniform. The profession and the people are not to have the opportunity of making any unfavourable comparisons.

Now, then, let us reprint the eighth clause of the Irish Medical Charities' Bill; of that Bill which Mr. PHELAN and Dr. NUGENT believe will place the control of the hospitals and all the other medical charities of Ireland in the hands of those medical inspectors who are to be liable to removal at the pleasure of the lord lieutenant. On reading this clause, it will be necessary to keep in mind the provisions of the section which we have just quoted; of that section which is to enable the Poor Law Commissioners to make rules and regulations for the government of all the *medical officers* of all the medical charities in the sister country:—

"8. And be it enacted, that the POOR LAW COMMISSIONERS for the time being, acting IN THE EXECUTION of an Act of the present session of Parliament, intituled, "An Act for the more effectual relief of the poor in Ireland," shall hereafter exercise a GENERAL SUPERINTENDENCE over all infirmaries, hospitals, dispensaries, asylums, and other medical charities throughout Ireland, and over the said medical inspectors appointed under the provisions of this Act."

Here, then, those vast and extraordinary powers which are conferred on the Commissioners by the forty-seventh section of the Irish Poor Law Bill, are ACKNOWLEDGED and CONFIRMED; and the GENERAL SUPERINTENDENCE which it is *again* stated that the Commissioners are authorized to exercise, is, in fact, nothing

more than "acting in the execution of a pro-"vision which enables them to make rules "and regulations *for every charitable medical* "*institution in Ireland.*"

After reading this exposition, we hope and believe that Mr. PHELAN and Dr. NUGENT will see the propriety of calling upon their professional brethren in Ireland to make a powerful, vigorous, united, effort to get the 47th section of the Irish Poor Law Bill even yet expunged from that measure, and then the Medical Charities' Bill may easily be made a most valuable statute. If, however, the "general superintendence" of the Commissioners is to be exercised in conformity with the provisions and powers in the 47th section of the Poor Relief Bill, the inspectors, like all the Boards of Guardians and officers under the Poor Law Commissioners in this country, will be only so many puppets, to be moved, dragged, or directed, at the will or pleasure of those despotic authorities. Let us, we repeat, make a powerful effort to get rid of the objectionable clause in the Irish Relief Bill, and all may yet be well. The profession in England, we rejoice to observe, are already indignant at noticing this new attack on their honour and independence, and are alive to all the pernicious consequences which the success of the odious project would necessarily produce.

WE last week briefly noticed the existence of an epidemic in certain districts of this metropolis, which presented several novel features, and was pressing with considerable severity on persons of impaired constitution, especially among the humbler classes. We stated that it bore a considerable resemblance to scarlet fever, and, indeed, seemed to be almost identical with that disease.

We find that, during the present week, it has continued to extend its progress; and further observation has led to the impression, that it is essentially distinct from scarlet fever, and bears a nearer relation to the maculated fever which was so prevalent in several of the crowded districts of the metropolis in the corresponding and preceding months of the last year. We shall now, according to our intention, proceed to describe the ordinary characters of the disease, as it has occurred in the district of THE LANCET Office, under our immediate observation.

Its invasion has usually been announced by rigors, occasionally but slight, and sometimes absent, accompanied by general malaise, and pain, referred to the osseous system; these premonitory symptoms were succeeded on the following day, almost invariably, by acute pain, commonly seated in the side, sometimes in the præcordial region, rarely in the epigastric, darting thence to the blade-bones, and the intervening space, where it occasionally became fixed. The stethoscope, in numerous instances, gave evidence of pleuritis,—in three cases, by a distinct *frottement*, accompanied by the minute crepitus of pneumonia, feebleness of respiration, and slight dulness on percussion; in four cases by the sonoro-sibilant râles of bronchitis. In all, the expectoration was scanty. We also observed, very frequently, a peculiar rubbing sound, which was essentially distinct from that of pleuritis, audible also on the side not complained of, and which diminished or disappeared on full inspiration; appearing to be dependent rather on a lesion of innervation than on organic change, and subsiding, nearly, or altogether, with the malady. Headach frequently existed, referred, in some cases, to the frontal, in others, to the occipital region, or the whole head; but in many cases it was absent.

The lumber pains, so usual in other fevers, were seldom, if ever, met with in this. Soreness of the throat, attended with redness and swelling of the fauces, was observed at this stage in one case. The tremour involved the tongue, and advanced to such a height, in conjunction with a copious secretion of viscid, glairy matter, as to threaten suffocation. No remarkable redness of the face had been observed in this patient, nor was pain in the side complained of, an almost invariable symptom in the other cases, the affection of the fauces apparently predominating, to the exclusion of every other. This patient had been in attendance on a family affected with scarlet fever.

The soreness of the throat, however, was often so indistinct, as merely to produce a slight stiffness or uneasiness of the fauces, and was frequently not mentioned by the patient, unless inquired for, and, in many cases, was altogether absent. The face and upper part of the thorax were next observed to be greatly flushed, and sometimes the backs of the hands and the forearms were similarly affected. The uneasiness, on the

following day reached its height, the aspect of the patient indicating great distress; but, above all, there was a peculiar restlessness and impatience, not easily to be described, but, once seen, immediately recognizable as characteristic of the epidemic, accompanied by an appearance of restlessness in some, of despondency in others.

There has generally been considerable heat and thirst, with the tongue usually red, rather moist, streaked with white, and contracted, in the simple and mixed forms; in the typhoid, dry, red, and glazed. The bowels have been invariably confined, and free from pain and tenderness. The urine has sometimes been high coloured, but more commonly of its ordinary tinge and quantity; its passage rarely accompanied by any uneasiness.

The favourable termination of the disease has been indicated by the diminution, or cessation, of the pain in the side, and the occurrence, in several patients, of an herpetic eruption on the face, especially about the mouth; and desquamation, chiefly of the forearms and hands; in a less degree, of the face, and occasionally extending over the whole body. On the hands, a peculiar mottled appearance was sometimes observed, synchronous with the desquamation. The tongue now also presented a bright cherry-red colour, and a moist appearance, from the removal of the epithelium.

The number of patients whom we have observed, has amounted to thirty-two, or about two-thirds of all who have, during the same period, presented themselves for medical relief. Of these, eight cases have been mild, ten severe, six very severe, and nine typhoid.

The treatment has depended entirely on the form of the disease, and the period of attack. In the milder varieties, an expectant plan, consisting of gentle aperients and low diet, is all that has been found necessary. In four of the severe cases, attended by most acute pain in the side and quick pulse, moderate bleeding, of from vii to xii ounces was attended with great relief; and in a fifth, leeches were applied to the feet, with a similar result. The administration, in this form, of calomel and ipecacuanha, to the extent of from three to six grains of each, daily, was attended with decided benefit. In three, where the nervous symptoms were very urgent, and no pain in the head was present, after bleeding, the prescription of five grains of calomel, with a grain of ipecacuanha, and a quarter of a grain of hydrochloride of morphine, followed by half an ounce of castor oil on the next morning, was attended with the desired result. Blisters, in the last mentioned form of the epidemic, were, in the advanced stages, powerful auxiliaries; in all, aperients were indispensable.

In the case of swelled fauces mentioned above, the removal, with the finger, of the viscid secretion, was found of great benefit, and the administration of an active purgative effected a speedy recovery. In the typhoid form, the exhibition of wine, early indicated by a rapid and failing pulse, was successful in five cases.

Up to the commencement of this epidemi notwithstanding the variable state of the weather, the number of diseases which could be traced, more or less directly, to atmospherical causes, was considerably less than in 1836, few cases of typhus gravior occurring, —a disease which prevailed most severely in this locality last year, and none attended by the dotted red appearance of the arms and chest, which then invariably marked the onset of that disorder.

As regards farther observation on the treatment, we would particularly draw attention to the distinctions which exist between the three forms. The detection of these in the outset of the disorder is of consequence. In no case can the treatment of one variety be substituted during a single day for that of another, without compromising the safety of the patient. The necessity of remembering the constitution of the season, so justly enforced by SYDENHAM, is particularly evident in the typhoid type, in which even the most moderate venesection, practised at its earliest period, would be attended by immediate and perilous prostration. It is equally necessary, however, as that great observer has also warned us, to guard against passing into the opposite extreme; for many cases occur where the employment of *moderate venesection* is not only useful but indispensable.

The average duration of the disease has been from twelve to sixteen days, and a decided prognosis could generally be given at about the seventh or eighth day.

CORRESPONDENTS.

F. C. Beyond doubt the nutrient apparatus of the body has the power of converting the substance in question into nutriment, but we consider that it ranks very low as wholesome food in the scale of provender; and, if eaten in large quantities, or by some persons even in very small, it will prove a source of discomfort and disease. Much valuable information on the subject of the digestive powers will be found in THE LANCET for May 14, 1836, pp. 293, 294. With regard to the question on the bath, the opinion entertained by F. C. may be regarded as generally correct. There may often, however, occur exceptions to the rule, and the proceeding might prove to be very injurious in very cold weather; but we doubt if a person thus suffering should take the bath at all as a remedial measure.

The letter of *A Medical Student* is too long; but if we extract from it the humour, his purpose will be served.